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WILLIAM M. HOWSLEY, M.D.

A. GAST & CO. LITH. ST. LOUIS.

HORTICULTURAL SOCIETY

H

KANSAS

HORTICULTURAL REPORT,

FOR THE YEAR 1879.

CONTAINING THE

PROCEEDINGS OF THE STATE HORTICULTURAL SOCIETY AT ITS NINTH
SEMI-ANNUAL MEETING, HELD AT BELOIT, MITCHELL COUNTY,
JUNE 17, 18 AND 19, AND THE THIRTEENTH ANNUAL
MEETING, HELD AT HOLTON, JACKSON COUNTY,
DECEMBER 16, 17 AND 18, 1879, TOGETHER
WITH THE PROCEEDINGS OF
DIVISION, COUNTY AND
LOCAL SOCIETIES.

EDITED BY THE SECRETARY.

VOL. IX.

PUBLISHED BY THE SOCIETY.

1869.

TOPEKA:
GEO. W. MARTIN, KANSAS PUBLISHING HOUSE.
1880.

FRUIT DISTR
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  Honorary
  Life, .
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FRUIT DISTRICTS.

1.—NORTHERN DISTRICT.

(Embraces the following counties.)

ATCHISON,
BROWN,
CLAY,
CLOUD,
DAVIS,
DICKINSON,
DONIPHAN,
ELLIS,
ELLSWORTH,
JACKSON,
JEWELL,
JEFFERSON,
LEAVENWORTH,
LINCOLN,
MARSHALL,
MITCHELL,
NEMAHA,
OSBORNE,
POTTAWATOMIE,
PHILLIPS,
REPUBLIC,
RILEY,
ROOKS,
RUSSELL,
SALINE,
SMITH,
SHAWNEE,
TREGO,
WASHINGTON,
WYANDOTTE.

2.—CENTRAL DISTRICT.

(Embraces the following counties.)

ANDERSON,
BARTON,
CHASE,
COFFEY,
DOUGLAS,
EDWARDS,
FRANKLIN,
HARVEY,
HODGEMAN,
JOHNSON,
LINN,
LYON,
MARION,
MIAMI,
MORRIS,
McPHERSON,
OSAGE,
PAWNEE,
RENO,
RICE,
RUSH,
WABAUNSEE.

3.—SOUTHERN DISTRICT.

(Embraces the following counties.)

ALLEN,
BARBOUR,
BOURBON,
BUTLER,
CHAUTAUQUA,
CHEROKEE,
COMANCHE,
COWLEY,
CRAWFORD,
ELK,
FORD,
GREENWOOD,
HARPER,
KINGMAN,
LABETTE,
MONTGOMERY,
NEOSHO,
SEDGWICK,
SUMNER,
WILSON,
WOODSON.

OFFICERS AND STANDING COMMITTEES FOR 1880.

OFFICERS.

President,
PROF. E. GALE, MANHATTAN, RILEY COUNTY.
Vice President,
G. Y. JOHNSON, LAWRENCE, DOUGLAS COUNTY.
Secretary,
G. C. BRACKETT, LAWRENCE, DOUGLAS COUNTY.
Treasurer,
FRED. WELLHOUSE, FAIRMOUNT, LEAVENWORTH COUNTY.
Trustees,
H. E. VAN DEMAN, GENEVA, ALLEN COUNTY. M. B. NEUMAN, WYANDOTTE, WYANDOTTE COUNTY.
J. W. ROBSON, CHEEVER, DICKINSON COUNTY.

STANDING COMMITTEES.

Nomenclature,
H. E. VAN DEMAN, GENEVA.
Botany and Vegetable Physiology,
J. W. ROBSON, CHEEVER.
Entomology,
PROF. F. H. SNOW, LAWRENCE.
Orchard Culture,
FRED. WELLHOUSE, FAIRMOUNT.
Forestry,
M. ALLEN, HAYS CITY.
Small Fruits,
E. A. COLEMAN, LAWRENCE.
Floriculture,
G. Y. JOHNSON, LAWRENCE.
Vegetable Gardening,
E. J. HOLMAN, LEAVENWORTH.
Handling Fruits,
L. A. WALKER, INDEPENDENCE.
Meteorology,
PROF. F. HAWN, LEAVENWORTH.
Vine Culture,
DR. J. STAYMAN, LEAVENWORTH.
Landscape Gardening,
PROF. E. GALE, MANHATTAN.
Horticulture Connected with Farming,
W. W. DICKINSON, WYANDOTTE.

LIST OF MEMBERS.

HONORARY MEMBERS.

(Enrolled in the order admitted.)

N. J. COLMAN,	*St. Louis, Mo.*
Dr. L. D. MORSE,	*St. Louis, Mo.*
C. W. MURTFELDT,	*St. Louis, Mo.*
WM. KING,	*St. Louis, Mo.*
Dr. JNO. A. WARDER,	*Cleves, Ohio.*
Prof. C. V. RILEY,	*Washington, D. C.*
Prof. JNO. H. TICE,	*St. Louis, Mo.*
SAMUEL MILLER,	*Sedalia, Mo.*
Prof. S. T. KELSEY,	*Highlands, N. C.*

LIFE MEMBERS.

(In the order and year enrolled.)

G. C. BRACKETT,	*Lawrence,*	1868
Dr. WM. M. HOWSLEY,	*Leavenworth,*	1875
C. G. WICKERSHAM,	*Parsons,*	1876
Dr. J. M. DeBALL,	*Fontana,*	1876
Prof. E. GALE,	*Manhattan,*	1876
H. E. VAN DEMAN,	*Geneva,*	1876
MANHATTAN HORTICULTURAL SOC'Y, SECRETARY'S OFFICE,		1876
FRED. WELLHOUSE,	*Fairmount,*	1877
ABNER ALLEN,	*Wabaunsee,*	1877
JOHNSON CO. HORTICULTURAL SOC'Y, SECRETARY'S OFFICE,		1877
GEO. Y. JOHNSON,	*Lawrence,*	1878
ROBT. MILLIKEN,	*Emporia,*	1878
A. A. ADAMS,	*Garnett,*	1878
W. E. FOSNOT,	*Ellsworth,*	1878
Dr. J. STAYMAN,	*Leavenworth,*	1879
A. N. GODFREY,	*Madison,*	1879
J. A. MOSHER,	*Belleville,*	1879

MEMBERS FOR 1879.

(Enrolled *ad interim.*)

BAILEY, A.,	*Junction City.*
BISHOP, L.,	*Osawatomie.*
BOHRER, Dr. G.,	*Raymond.*
BUCKMAN, THOS.,	*Topeka.*
BUCKMAN, A. H.,	*Topeka.*
BYRAM, E. T.,	*Jewell City.*
CHASE, A.,	*Cawker City.*
CHEVALIER, C. C.,	*Garfield.*
DETHERIDGE, I.,	*Fame.*
HILL, JOSHUA,	*Parsons.*
KNAPP, V. Y.,	*Parsons.*
MEIXELL, W.,	*Parsons.*
NOYES, M.,	*Parsons.*
NOYES, J. R.,	*Lincoln, Neb.*
PIERSON, Y. Y.,	*Parsons.*
RALPH, M. A.,	*Wichita.*
SMITH, H. W.,	*Exeter.*
WILSON, AUG.,	*Parsons.*
ZURI, J. S.,	*Pride.*

MEMBERS FOR 1879.

(Enrolled at Ninth Semi-Annual Meeting; membership expires at Tenth Semi-Annual Meeting, 1880.)

FOSTER, J. S.,	*Jewell City.*
LONGWORTH, H. F.,	*Beloit.*
MERRYMAN, J. Q.,	*Fort Scott.*
NELSON, J. L.,	*Beloit.*
SHEPPERD, J. M.,	*Abilene.*
TAYLOR, E. A.,	*Beloit.*
TRACY, E. C.,	*Ottawa.*

Lady Members.

SHEPPERD, Mrs. J. M.,	*Abilene.*
STILL, Mrs. M. L.,	*Beloit.*
TAYLOR, Mrs. E. A.,	*Beloit.*
VAN ZANT, Mrs. F. M.,	*Beloit.*

MEMBERS FOR 1880.

ADAMSON, Dr. V. V.,*	*Holton.*
ALLEN, MARTIN,	*Hays City.*
ALLEN, ABNER,*	*Wabaunsee.*
BLOSSER, D.,	*Holton.*
BURDICK, C. D.,*	*Emporia.*
COVALT, Y.,	*Parsons.*
DEMING, N. P.,	*Lawrence.*
HALL, J. N.,	*Oskaloosa.*
HIXON, J.,	*Holton.*
HOLMAN, E. J.,	*Leavenworth.*
MEASER, J. J.,	*Vienna.*
MILLER, J. M.,	*Emporia.*
MOSHER, J. A.,*	*Belleville.*
NEUMAN, M. B.,*	*Wyandotte.*
NIXON, THOS.,	*Argyle.*
POMEROY, J. F.,	*Holton.*
POPE, A. J.,	*Wichita.*
POPENOE, Prof. E. A.,* ,	*Manhattan.*
REGAR, H.,	*Onaga.*
REYNOLDS, SAM.,*	*Lawrence.*
ROBSON, J. W.,*	*Cheever.*
TRAFTON, N.,	*Milford.*
WALKER, T.,	*Parsons.*
WELLHOUSE. F.,*	*Fairmount.*
VAN DEMAN, H. E.,*	*Geneva.*

Lady Member.

MACY, Miss M. L.,	*Lawrence.*

* Delegate.

LIST OF COUNTY VICE PRESIDENTS.

(Entitled to Annual Membership for 1880, under Art. III, Const., as amended at 18th Annual Meeting.)

ADAMS, A. A.,	*Garnett.*
ALLEN, ABNER,	*Wabaunsee.*
ALLEN, MARTIN,	*Hays City.*
ASHBY, G. W.,	*Chanute.*
BAILEY, A. D.,	*Wa-Keeney.*
BARNETT, W. D.,	*Holton.*
BEEGLE, E. S.,	*Clay Center.*
BISHOP, L.,	*Osawatomie.*
BOGGS, THEO.,	*McPherson.*
BROWN, G. B.,	*Guilford.*
BUCKMAN, THOS.,	*Topeka.*
BUNN, BURR H.,	*Rush Center.*
CHEVALIER, C. C.,	*Garfield.*
COOK, THOS. F.,	*Monrovia.*
CORBETT, J. B.,	*Bunker Hill.*
CUTTER, WM.,	*Junction City.*
DETHERIDGE, I.,	*Fame.*
DICKINSON, W. W.,	*Wyandotte.*
DIMOCK, A. S.,	*Hutchinson.*
EDGERLY, S. J.,	*Seneca.*
ELLIS, A.,	*Elk City.*
FOSNOT, W. E.,	*Ellsworth.*
FOSTER, J. S.,	*Jewell City.*
FULLER, P. W.,	*Hiawatha.*
GRAHAM, C. H.,	*Leroy.*
HALL, J. N.,	*Oskaloosa.*
HALL, M.,	*Newton.*
HARMAN, J. P.,	*Vesper.*
HARRIS, F. B.,	*White City.*
HATCH, S.,	*Wathena.*
HOLMAN, E. J.,	*Leavenworth.*
JONES, W. D.,	*Barclay.*
KELSEY, C. C.,	*Humboldt.*
LATIMER, J. W.,	*Pleasanton.*
LEACH, L. W.,	*Kingman.*
LEWIS, W. A.,	*Russell.*
LITSON, W. H.,	*Benton.*
MANLOVE, J. D.,	*Fort Scott.*
MAXWELL, WM.,	*Edgerton.*
McKEE, JOHN,	*Marysville.*
McCRACKEN, WM.,	*Sunny Dale.*
McLAREN, J. W.,	*Summerville.*
MILLIKEN, R.,	*Emporia.*
MOHLER, M.,	*Osborne City.*
MOSHER, J. A.,	*Belleville.*
MULLANEY, J. F.,	*Stockton.*
NICOLL, JAS.,	*Speareville.*
NORTHRUP, H. A.,	*Salina.*
PEARSON, S. W.,	*Lawrence.*
PING, THOS.,	*Girard.*
POPENOE, Prof. E. A.,	*Manhattan.*
PRESCOTT, JOHN B.,	*Pierceville.*
RICHMOND, R. A.,	*Star.*
ROBSON, J. W.,	*Cheever.*
SAMPSON, J. G.,	*El Paso.*
SCHLICHTER, J. B.,	*Sterling.*
SHAW, N. W.,	*Nevada.*
SHEFFIELD, C. H.,	*Glasco.*
STILES, H. A.,	*Pavilion.*
SMITH, T. W.,	*Baxter Springs.*
SMITH, W. W.,	*Neosho Falls.*
SMITH, A. C.,	*Wellington.*
TAYLOR, E. A.,	*Beloit.*
TEMPEST, P.,	*Whitfield.*
VAN DEMAN, H. E.,	*Geneva.*
VAN DOREN, J.,	*Winfield.*
WALKER, L. A.,	*Independence.*
WELSH, H. P.,	*Ottawa.*
WELTY, HENRY,	*Elk Falls.*
WILLIAMS, J. W.,	*Cope.*
WILLIAMS, J. L.,	*Oswego.*
WILLIAMSON, DR. CHAS..	*Washington.*

DELEGATES AT THIRTEENTH ANNUAL MEETING.

DOUGLAS COUNTY HORTICULTURAL SOCIETY,	Sam. Reynolds,	*Lawrence.*
	E. A. Coleman,	*Lawrence.*
DICKINSON COUNTY HORTICULTURAL SOCIETY,	J. W. Robson,	*Cheever.*
JACKSON COUNTY HORTICULTURAL SOCIETY,	Dr. V. V. Adamson,	*Holton.*
	A. J. Clark,	*Holton.*
LEAVENWORTH COUNTY HORTICULTURAL SOCIETY,	E. J. Holman,	*Leavenworth.*
	F. Wellhouse,	*Fairmount.*
	Dr. J. Stayman,	*Leavenworth.*
LYON COUNTY HORTICULTURAL SOCIETY,	C. D. Burdick,	*Emporia.*
	J. M. Miller,	*Emporia.*
MANHATTAN HORTICULTURAL SOCIETY,	Prof. E. A. Popenoe,	*Manhattan.*
REPUBLIC COUNTY HORTICULTURAL SOCIETY,	J. A. Mosher,	*Belleville.*
WABAUNSEE COUNTY HORTICULTURAL SOCIETY,	Abner Allen,	*Wabaunsee.*
WYANDOTTE COUNTY HORTICULTURAL SOCIETY,	M. B. Neuman,	*Wyandotte.*

DIVISION, COUNTY AND LOCAL SOCIETIES, AND SECRETARIES FOR 1880.

NORTHWESTERN HORTICULTURAL SOCIETY,	E. A. Taylor, Secretary,	*Beloit.*
SOUTHEASTERN HORTICULTURAL SOCIETY,	G. W. Ashby, Secretary,	*Chanute.*
ANDERSON COUNTY HORTICULTURAL SOCIETY,	M. A. Page, Secretary,	*Garnett.*
BOURBON COUNTY HORTICULTURAL SOCIETY,	J. B. Saxe, Secretary,	*Fort Scott.*
BUTLER COUNTY HORTICULTURAL SOCIETY,	L. Miller, Cor. Secretary,	*Eldorado.*
COWLEY COUNTY HORTICULTURAL SOCIETY,	J. Van Doren, Secretary,	*Winfield.*
CHASE COUNTY HORTICULTURAL SOCIETY,	J. W. Byram, Secretary,	*Cedar Point.*
COTTONWOOD HORTICULTURAL CLUB,	J. W. Byram, Secretary,	*Cedar Point.*
CRAWFORD COUNTY HORTICULTURAL SOCIETY,	G. W. Mosteller, Secretary,	*Girard.*
DONIPHAN COUNTY HORTICULTURAL SOCIETY,	S. Hatch, Secretary,	*Wathena.*
DOUGLAS COUNTY HORTICULTURAL SOCIETY,	Sam. Reynolds, Secretary,	*Lawrence.*
DICKINSON COUNTY HORTICULTURAL SOCIETY,	J. W. Robson, Secretary,	*Cheever.*
NORTH DICKINSON HORTICULTURAL SOCIETY,	W. A. Cleveland, Secretary,	*Cheever.*
ELK COUNTY HORTICULTURAL SOCIETY,	Dan. Newby, Secretary,	*Howard.*
FRANKLIN COUNTY HORTICULTURAL SOCIETY,	H. P. Welsh, Secretary,	*Ottawa.*
JACKSON COUNTY HORTICULTURAL SOCIETY,	Dr. V. V. Adamson, Secretary,	*Holton.*
JEFFERSON COUNTY HORTICULTURAL SOCIETY,	Edwin Snyder, Secretary,	*Oskaloosa.*
JOHNSON COUNTY HORTICULTURAL SOCIETY,	B. S. McFarland, Secretary,	*Olathe.*
LABETTE COUNTY HORTICULTURAL SOCIETY,	H. S. Coley, Secretary,	*Oswego.*
LEAVENWORTH CO. HORTICULTURAL SOCIETY,	A. G. Chandlee, Secretary,	*Leavenworth.*
LYON COUNTY HORTICULTURAL SOCIETY,	C. J. Hartman, Secretary,	*Emporia.*
MANHATTAN HORTICULTURAL SOCIETY,	Ambrose Todd, Secretary,	*Manhattan.*
MIAMI COUNTY HORTICULTURAL SOCIETY,	E. W. Robinson, Secretary,	*Paola.*
MONTGOMERY CO. HORTICULTURAL SOCIETY,	L. A. Walker, Secretary,	*Independence.*
NEOSHO COUNTY HORTICULTURAL SOCIETY,	Mrs. J. H. Skeels, Secretary,	*Galesburg.*
PAWNEE COUNTY HORTICULTURAL SOCIETY,	R. B. Gee, Secretary,	*Garfield.*
POTTAWATOMIE CO. HORTICULTURAL SOCIETY,	J. J. Measer, Secretary,	*Vienna.*
RENO COUNTY HORTICULTURAL SOCIETY,	L. J. Templin, Secretary,	*Hutchinson.*
REPUBLIC COUNTY HORTICULTURAL SOCIETY,	W. P. Peake, Secretary,	*Belleville.*
RICE COUNTY HORTICULTURAL SOCIETY,	J. H. Stubbs, Secretary,	*Sterling.*
SALINE COUNTY HORTICULTURAL SOCIETY,	R. H. Bishop, Secretary,	*Salina.*
WABAUNSEE COUNTY HORTICULTURAL SOCIETY,	H. A. Stiles, Secretary,	*Pavilion.*
WASHINGTON COUNTY HORTICULTURAL SOCIETY,	E. J. Nason, Secretary,	*Washington.*
WYANDOTTE COUNTY HORTICULTURAL SOCIETY,	M. B. Neuman, Secretary,	*Wyandotte.*
GRANT TOWNSHIP HORT. SOC'Y (Sedgwick Co.),	Dr. T. J. Miller, Secretary,	*Sunny Dale.*

CERTIFICATE OF INCORPORATION.

We, the undersigned citizens of Kansas, do hereby associate ourselves as a body corporate, to be known as the KANSAS STATE HORTICULTURAL SOCIETY, for the promotion of horticultural and pomological science in the State of Kansas.

The principal office or place of business of said Society shall be at the city of Lawrence, or such other place in the State of Kansas as the Society may designate at a regular meeting thereof.

The number of Trustees of said Society shall be seven, and such Trustees shall have power to make all necessary rules and by-laws for the government of said Society and the transaction of its business.

Said Society shall have succession, under the provisions of this charter and the laws of the State of Kansas, for the term of nine hundred and ninety-nine years.

In witness of all which, we have hereunto set our hands and seals, at the city of Ottawa, in the county of Franklin, in said State of Kansas, this fifteenth day of December, A. D. 1869.

WM. TANNER, *Leavenworth.*
C. B. LINES, *Wabaunsee.*
WM. M. HOWSLEY, *Leavenworth.*
S. T. KELSEY, *Pomona.*
G. C. BRACKETT, *Lawrence.*
GEO. T. ANTHONY, *Leavenworth.*
J. STAYMAN, *Leavenworth.*

STATE OF KANSAS, } ss.
COUNTY OF DOUGLAS, }

On this 15th day of December, 1869, before me, a notary public in and for said county, came William Tanner of Leavenworth county, Charles B. Lines of Wabaunsee county, William M. Howsley of Leavenworth county, S. T. Kelsey of Franklin county, George C. Brackett of Douglas county, George T. Anthony of Leavenworth county, J. Stayman of Leavenworth, to me personally known to be the identical persons described in and who signed the above charter, and acknowledged the same to be their own act and deed for the purposes therein.

JAMES CHRISTIAN,
[SEAL.] *Notary Public, Douglas County.*

I, W. H. Smallwood, Secretary of the State of Kansas, do hereby certify that the foregoing is a true and correct copy of the original certificate of incorporation, filed in my office December 20, A. D. 1869.

In testimony whereof, I have hereunto subscribed my name and affixed the great seal of the State. Done at Topeka, this twenty-ninth day of August, A. D. 1871.

{GREAT SEAL OF KANSAS.}

W. H. SMALLWOOD, *Secretary of State.*

CONSTITUTION.

ARTICLE I. This association shall be known as the KANSAS STATE HORTICULTURAL SOCIETY.

ART. II. Its object shall be the advancement of the science and art of horticulture.

ART. III. Its membership shall consist of annual members, paying an annual fee of one dollar; of life members, paying a fee of ten dollars at one time; and of honorary members, who shall be persons only of distinguished merit in horticulture, and shall be elected to membership by a vote of the Society.

ART. IV. Its officers shall consist of a President, Vice President, Secretary and Treasurer, who shall be elected by ballot at each annual meeting of the Society, and shall hold their office for the term of one year or until their successors shall be elected. They shall perform the duties usually devolving upon such officers, and shall be *ex officiò* members of the Board of Trustees, consisting of the above-named officers and three other members, who shall be elected and hold their term of office as the other officers. Said Board shall, under the direction of the Society, manage all its affairs.

ART. V. It shall hold an annual meeting in the month of December, and a semi-annual meeting in the month of June, at such time and place as the Society or Board of Trustees may direct.

ART. VI. This Constitution may be amended at any annual meeting of the Society, by a two-thirds vote of the members present.

The following was adopted as an additional article at the Seventh Annual Meeting, Dec. 2, 1873:

ART. VII. There shall be a vice president annually appointed from each county in the State, whose duty it shall be to organize local horticultural societies in their respective counties, whenever practicable; to report at each annual meeting on the general subject of fruit culture in their respective counties; and to look after the general interests of horticulture in their particular localities.

AMENDMENTS.

Art. III was amended at the Fifth Annual Meeting, Dec. 19, 1871, by the following resolution:

Resolved, That article three of the Constitution be so amended that all annual memberships shall expire on the morning of the second day of the next annual meeting, and all semi-annual memberships shall expire on the morning of the second day of the next semi-annual meeting.

Also amended at the Ninth Annual Meeting, December 15, 1875, so as to read:

Ladies attending the meetings of the Society may become members without fee; and two delegates from each of the district horticultural societies, and one delegate from other auxiliary horticultural societies organized under the general statutes of the State of Kansas, attending the meetings of this Society, shall be entitled to a membership without payment of the usual fee.

Also amended at the Tenth Annual Meeting, December 5, 1876, so as to read:

Of life members, paying a fee of ten dollars in four annual installments of two dollars and a half each.

Also, the following additional provision:

That the office of secretary of any district, county and local horticultural society may be made a perpetual membership, upon the terms provided for a life-membership.

At the Thirteenth Annual Meeting, December 16, 1879, Art. III was amended as follows:

That any person who shall have performed the duties of a County Vice President under the provisions of Art. VII of the Constitution for one year, shall be enrolled an annual member; and that when such services shall have been rendered for the term of ten years, consecutive or otherwise, such person shall be enrolled as a life member, and entitled to all the benefits of such membership.

STATE LAWS.

BIRD LAW OF 1877.

An Act for the protection of birds, and to repeal chapter eighty-two of laws of eighteen hundred and seventy-six.

Be it enacted by the Legislature of the State of Kansas:

Section 1. That it shall be unlawful for any person or persons, at any time, to catch, kill or trap, net or ensnare, or to pursue with such intent, any wild bird, except the wild goose, duck, hawk, owl and snipe; and any person or persons violating the provisions of this act shall be fined in any sum not more than fifteen dollars nor less than five dollars, for each and every offense, to be recovered in any court of competent jurisdiction, in the proper county: *Provided,* That it shall not be unlawful to kill the prairie chicken between the first day of August and the first day of February, and it shall not be unlawful to kill quail from the first day of October to the first day of January of each year: *And provided further,* It shall not be necessary on the trial of any action or prosecution to prove the true name of the bird caught, killed, trapped, netted or ensnared, it being sufficient to show that a wild bird other than those excepted in this act was caught, killed, trapped, netted or ensnared by the defendant or defendants.

Sec. 2. It shall be unlawful for any person intentionally to destroy or remove from the nest of any wild bird any eggs or the young of such bird, or for any purpose to buy, sell, or, have in possession, or traffic in such eggs, or willfully destroy the nest of any wild bird; and any person so offending, on conviction thereof, shall be fined in the sum of five dollars for each and every offense.

Sec. 3. It shall be unlawful for any person, railroad corporation, or express company, or any common carrier, knowingly, to transport, or to ship, or to receive for the purpose of transporting or shipping, any wild bird in or out of the State of Kansas; and any common carrier so offending shall be fined in the sum of one hundred dollars for each and every offense, to be recovered in an action brought in the name of the State of Kansas by any person against such person, corporation or company, before any court of competent jurisdiction, in any county into or through which said game may be taken; and any agent of any such person, corporation or company, who shall knowingly violate any of the provisions of this section, by receiving or shipping any such game, as the agent of such person, corporation or company, shall, on conviction thereof, be fined in a sum not less than ten nor more than fifty dollars for each offense; and the having in possession any wild bird, dead or alive, shall be deemed and held as *prima facie* evidence that the same were killed or taken by the company, corporation or persons having possession of the same, in violation of the provisions of this act: *Provided,* That such penalty shall not apply to the transportation of such wild birds in transit through this State from other States and Territories, or to the importation of insectivorous birds.

Sec. 4. The provisions of this act shall not apply to any person who shall kill or catch any wild bird or birds for the sole purpose of preserving them as specimens for scientific purposes, nor to any person who shall collect the eggs or nests of any wild bird for such scientific purposes: *Provided,* That in a prosecution for the violation of any of the provisions of this act, it shall not be necessary for the prosecution to prove that the killing or catching of any wild bird, or the taking of the nests or eggs, as the case may be, was not done for scientific purposes.

Sec. 5. All prosecutions or suits under this act shall be commenced within three months after the offense is alleged to have been committed; and the court before whom any action is prosecuted under the provisions of this act shall tax as part of the costs of the case against the defendant, on conviction, the sum of ten dollars, to be paid when collected to the attorney prosecuting such action.

Sec. 6. Chapter eighty-two of the session laws of eighteen hundred and seventy-six is hereby repealed.

Sec. 7. This act shall take effect and be in force from and after its publication in the *Commonwealth*.

Approved March 5, 1877.

CHAPTER CXIII, GENERAL STATUTES.

An Act to prevent certain trespasses.

Be it enacted by the Legislature of the State of Kansas:

Section 1. If any person shall cut down, injure or destroy, or carry away any tree placed or growing for use, shade or ornament, or any timber, etc., etc., the party so offending shall pay the injured treble the value of the thing so injured, etc., with costs, and shall be deemed guilty of a misdemeanor, and shall be subject to a fine not exceeding five hundred dollars.

Approved March 3, 1868.

KANSAS STATE HORTICULTURAL SOCIETY.

An Act making an appropriation for the Kansas State Horticultural Society for the fiscal years ending June 30, A. D. 1880, and June 30, A. D. 1881.

Be it enacted by the Legislature of the State of Kansas:

Section 1. That the sum of two thousand five hundred dollars for the fiscal year ending June 30, A. D. 1880, and the further sum of two thousand five hundred dollars for the fiscal year ending June 30, A. D. 1881, are hereby appropriated to the Kansas State Horticultural Society, out of any funds not otherwise appropriated.

Sec. 2. That the Auditor of State is hereby authorized to issue his warrants upon the Treasurer of State in favor of the Treasurer of the Kansas State Horticultural Society for the purposes and for the amounts specified in the first section of this act.

Sec. 3. That the Secretary of the Kansas State Horticultural Society shall hereafter, annually, make out and publish two thousand five hundred copies of the proceedings of the said Society, for public distribution.

Sec. 4. This act shall take effect and be in force from and after its publication in the *Weekly Commonwealth*.

Approved March 10, 1879.

UNITED STATES LAWS RELATING TO HORTICULTURE.

[GENERAL NATURE—No. 105.]

AN ACT to encourage the growth of timber on western prairies.

Be it enacted by the Senate and House of Representatives of the United States of America, in Congress assembled, That any person who shall plant, protect, and keep in a healthy, growing condition for ten years, forty acres of timber, the trees thereon not being more than twelve feet apart each way, on any quarter-section of any of the public lands of the United States, shall be entitled to a patent for the whole of said quarter-section at the expiration of said ten years, on making proof of such fact by not less than two credible witnesses: *Provided,* That only one quarter in any section shall be thus granted.

SEC. 2. That the person applying for the benefit of this act shall, upon application to the register of the land office in which he or she is about to make such entry, make affidavit before said register or receiver that said entry is made for the cultivation of timber, and upon filing such affidavit with said register and receiver, and on payment of ten dollars, he or she shall thereupon be permitted to enter the quantity of land specified: *Provided, however,* That no certificate shall be given or patent issued therefor until the expiration of at least ten years from the date of such entry; and if at the expiration of such time, or at any time within three years thereafter, the person making such entry, or if he or she be dead, his or her heirs, or legal representatives, shall prove by two credible witnesses that he, she or they have planted, and for not less than ten years have cultivated and protected, such quantity and character of timber as aforesaid, they shall receive the patent for such quarter-section of land.

SEC. 3. That if at any time after the filing of said affidavit, and prior to the issuing of the patent for said land, it shall be proven, after due notice to the party making the entry and claiming to cultivate such timber, to the satisfaction of the register of the land office, that such person has abandoned or failed to cultivate, protect, and keep in good condition such timber, then, and in that event, said land shall revert to the United States.

SEC. 4. That each and every person who, under the provisions of an act entitled "An act to secure homesteads to actual settlers on the public domain," approved May twentieth, eighteen hundred and sixty-two, or any amendment thereto, having a homestead on said public domain, who, at the end of the third year of his or her residence thereon, shall have had under cultivation, for two years, one acre of timber, the trees thereon not being more than twelve feet apart each way, and in a good, thrifty condition, for each and every sixteen acres of said homestead, shall, upon due proof of said fact by two credible witnesses, receive his or her patent for said homestead.

SEC. 5. That no land acquired under provisions of this act shall, in any event, become liable to the satisfaction of any debt or debts contracted prior to the issuing of patent therefor.

SEC. 6. That the Commissioner of the General Land Office is hereby required to prepare and issue such rules and regulations, consistent with this act, as shall be necessary and proper to carry its provisions into effect; and that the registers and receivers of the several land offices shall be entitled to receive the same compensation for any lands entered under the provisions of this act that they are now entitled to receive, when the same quantity of land is entered with money.

SEC. 7. That the fifth section of the act entitled "An act in addition to an act to punish crimes against the United States, and for other purposes," approved March third, eighteen hundred and fifty-seven, shall extend to all oaths, affirmations and affidavits required or authorized by this act.

Approved March 3, 1873.

[GENERAL NATURE—No. 16.]

AN ACT to amend the act entitled "An act to encourage the growth of timber on western prairies."

Be it enacted by the Senate and House of Representatives of the United States of America, in Congress assembled, That the act entitled "An act to encourage the growth of timber on western prairies," approved March third, eighteen hundred and seventy-three, be and the same is hereby amended so as to read as follows: That any person who is the head of a family, or who has arrived at the age of twenty-one years, and is a citizen of the United States, or who shall have filed his declaration of intention to become such, as required by the naturalization laws of the United States, who shall plant, protect, and keep in a healthy growing condition for eight years, forty acres of timber, the trees thereon not being more than twelve feet apart each way, on any quarter-section of any of the public lands of the United States, or twenty acres on any legal subdivision of eighty acres, or ten acres on any legal subdivision of forty acres, or one-fourth part of any fractional subdivision of land less than forty acres, shall be entitled to a patent for the whole of said quarter-section, or of such legal subdivision of eighty or forty acres, or fractional subdivision of less than forty acres, as the case may be, at the expiration of said eight years, on making proof of such fact by not less than two credible witnesses: *Provided*, That not more than one-quarter of any section shall be thus granted, and that no person shall make more than one entry under the provisions of this act, unless fractional subdivisions of less than forty acres are entered, which, in the aggregate, shall not exceed one quarter-section.

SEC. 2. That the person applying for the benefit of this act shall, upon application to the register of the land district in which he or she is about to make such entry, make affidavit before the register, or the receiver, or some officer authorized to administer oaths in the district where the land is situated, who is required by law to use an official seal, that said entry is made for the cultivation of timber, and upon filing said affidavit with said register and said receiver, and on payment of ten dollars, he or she shall thereupon be permitted to enter the quantity of land specified; and the party making an entry of a quarter-section under the provisions of this act shall be required to break ten acres of the land covered thereby the first year, ten acres the second year, and twenty acres the third year after the date of entry, and to plant ten acres of timber the second year, ten acres the third year, and twenty acres the fourth year after date of entry. A party making an entry of eighty acres shall break and plant, at the times hereinbefore prescribed, one-half of the quantity required of a party who enters a quarter-section, and a party entering forty acres shall break and plant, at the times hereinbefore prescribed, one-quarter of the quantity required of a party who enters a quarter-section, or a proportionate quantity for any smaller fractional subdivision: *Provided, however*, That no final certificate shall be given or patent issued for the land so entered until the expiration of eight years from the date of such entry; and if at the expiration of such time, or at any time within five years thereafter, the person making such entry, or if he or she be dead, his or her heirs, or legal representatives, shall prove, by two credible witnesses, that he, or she, or they have planted, and for not less than eight years have cultivated and protected such quantity and character of timber as aforesaid, they shall receive a patent for such quarter-section or legal subdivision of eighty or forty acres of land, or for any fractional quantity of less than forty acres, as herein provided. And in case of the death of a person who has complied with the provisions of this act for the period of three years, his heirs or legal representatives shall have the option to comply with the provisions of this act, and receive at the expiration of eight years a patent for one hundred and sixty acres, or receive without delay a patent for forty acres, relinquishing all claim to the remainder.

SEC. 3. That if at any time after the filing of said affidavit, and prior to the issuing of the patent for said land, the claimant shall abandon the land or fail to do the breaking and planting required by this act, or any part thereof, or shall fail to cultivate, protect and keep in good condition such timber, then, and in that event, such land shall be subject to entry under the homestead laws, or by some other person under the provisions of this act: *Provided*, That the party making claim to said land, either as a homestead settler or under this act, shall give, at the time of filing his application, such notice to the original claimant as shall be prescribed by the rules established by the Commissioner of the General Land Office, and the rights of the parties shall be determined as in other contested cases.

SEC. 4. That each and every person who, under the provisions of the act entitled "An act to secure homesteads to actual settlers on the public domain," approved May twentieth, eighteen hundred and sixty-two, or any amendment thereto, having a homestead on said public domain, who, at any time after the end of the third year of his or her residence thereon, shall, in addition to the settlement and improvements now required by law, have had under cultivation, for two years, one acre of timber, the trees thereon not being more than twelve feet apart each way, and in good, thrifty condition, for each and every sixteen acres of said homestead, shall, upon due proof of such fact by two credible witnesses, receive his or her patent for said homestead.

SEC. 5. That no land acquired under the provisions of this act shall in any event become liable to satisfaction of any debt or debts contracted prior to the issuing of certificate therefor.

SEC. 6. That the Commissioner of the General Land Office is hereby required to prepare and issue such rules and regulations, consistent with this act, as shall be necessary and proper to carry its provisions into effect; and that the registers and the receivers of the several land offices shall each be entitled to receive two dollars at the time of entry, and the same sum when the claim is finally established and the final certificate issued.

SEC. 7. That the fifth section of the act entitled "An act in addition to an act to punish crimes against the United States, and for other purposes," approved March third, eighteen hundred and fifty-seven, shall extend to all oaths, affirmations and affidavits required or authorized by this act.

SEC. 8. That parties who have already made entries under the act approved March third, eighteen hundred and seventy-three, of which this is amendatory, shall be permitted to complete the same upon full compliance with the provisions of this act.

Approved March 13, 1874.

[PUBLIC—NO. 71.]

AN ACT for the relief of certain settlers on the public lands.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That it shall be lawful for homestead and preëmption settlers on the public lands, or preëmption settlers on Indian reservations, where crops were destroyed or seriously injured by grasshoppers in the year eighteen hundred and seventy-seven, to leave and be absent from said lands until the first day of October, eighteen hundred and seventy-eight, under such rules and regulations as to proof of the same as the Commissioner of the General Land Office shall prescribe; and where such grasshoppers shall reappear in eighteen hundred and seventy-eight, to the like destruction or injury of crops, the right to leave and be absent as aforesaid shall continue to October first, eighteen hundred and seventy-nine; and during such absence no adverse rights shall attach to said lands, such settlers being allowed to resume and perfect their settlement as though no such absence had occurred.

SEC. 2. That the time for making final proof and payment by preëmptors whose crops have been destroyed or injured as aforesaid is hereby extended for one year after the expiration of the term of absence provided for in the first section of this act; and all the rights and privileges extended by this act to homestead and preëmption settlers shall apply to and include the settlers under an act entitled "An act to encourage the growth of timber on western prairies," approved March third, eighteen hundred and seventy-three, and the acts amendatory thereof.

Approved March 3, 1877.

BIOGRAPHICAL SKETCH OF WILLIAM M. HOWSLEY, M. D.

PREPARED BY PRESIDENT E. GALE.

In the exercise of a Christian faith, we are called upon to record the triumphant departure of Dr. William M. Howsley from the pains and infirmities of this life, at the residence of his son-in-law, Jas. H. Berryman, in Central City, Neb., March 7, 1880, in the eighty-second year of his age. Few men have been more intimately associated with the development of Horticulture in America than he whose name stands at the head of this sketch. Few have stood out more boldly and constantly for the right. A Western man by birthright, his whole life has been identified in a quiet, unobtrusive, and yet earnest way, with the growth of the material, social and religious interests of the great West. We owe him at least a sacred place in our memory for the work which he has done; and his relation to the State Horticultural Society of Kansas has been so intimate and influential, that a most grateful acknowledgment of his devotion and work seems to be the first duty of those who survive him.

The parents of Dr. Howsley emigrated about the year 1793 from Virginia to Bardstown, Kentucky. At that time Bardstown was only a fort. Few of us now are able to understand the dangers and rugged experiences then inseparable from the life of the early settlers in the wilderness. It was in the midst of these scenes that Dr. Howsley was born — in November, 1798 — and here he grew to manhood. His father seems to have cherished the idea that his son William must learn a trade; and as the parental will dictated, so William was apprenticed to learn a trade; but his employment seemed no way suited to his taste, and very soon he returned home. After five unsuccessful efforts, with first one employment and then another, his father leaves him to work out his own course. When about sixteen or seventeen years old, he had conceived the idea of entering professional life, and having demonstrated, no doubt to the satisfaction of his father, the utter uselessness of seeking to force his life into some mechanical pursuit, he was permitted to bend his energies in the direction of his choice. He knew that mental culture was the first requisite, and as well also that the path before him was not an easy one. His father held to the idea that any young man with health, who was suited to a profession, could work his way up unaided, and so he was left to struggle on towards a professional life as best he could. He was obliged to study mostly in the night, attending school a few weeks or a few months at a time, as opportunity offered. When he became of age he began a course of study at a Catholic college in Bardstown, which by this time had grown to be quite a large place. He attended this school for considerable time, but did not quite complete the course. He was reared a Catholic, but never fully embraced the sentiments of that church. His mother was a Protestant, and doubtless we shall recognize her influence in the fact that before he had reached twenty years of age he had embraced the sentiments of the Baptists, and united with that church. When about twenty-three years of age he began the study of medicine, under the celebrated Dr. Rush. In a short time he completed the study, and attended medical lectures at Frankfort, Ky., where he received his diploma. He immediately commenced the practice of medicine, in the town of Boston, in his native county, and for thirty years was actively engaged in the duties of his profession.

He was twice married; first, to Miss Elizabeth Ann Cotton, who died of consumption in a year after. He afterward married Miss Ann Hardin, the daughter of Col. M. Hardin, of Hardin county, Ky., with whom he lived almost fifty years. About the year 1834 he removed to Hardin county, Ky., and two years later, in 1836, he began a nursery on a small scale, a thing at that time almost unknown in that region. From this time to the end of his life he was enthusiastically devoted to the interests of horticulture. His thought, his time and money were given freely to promote its interests. Those who have known him during the whole of this long period, bear testimony to his changeless devotion to "the art that mends nature." And those who knew him best can readily believe that few men have ever held grander conceptions of the part horticulture is destined to play in promoting the civilization of the human race. To his mind, the production of improved fruits, more beautiful flowers and attractive lawns, was only the promise of a healthier race, of happier homes and a higher and nobler civilization.

When near forty-five years old, he began to preach for the societies of Free-Will Baptists in his immediate neighborhood. Thus for ten years he employed many of his Sabbaths.

Dr. Howsley has always been known as a fearless defender of what he believed to be right. His medical practice bringing him face to face with many of the evils of intemperance, and looking upon those evils from a scientific standpoint, he was forced, without reference to popular effect, to take his stand among the earliest agitators of the temperance cause in the South. He was widely known as an eloquent and successful lecturer, and for several years was Grand Worthy Patriarch of the Sons of Temperance in Kentucky.

He removed to Bowling Green in the spring of 1856, where he had been for several years interested in the nursery business with his eldest son.

Possessed of a strong physical constitution, and a mind of remarkable elasticity, at an age when most men begin to think of laying off the responsible duties of life we find him in his sixty-first year breaking the ties that bound him to his old home and his native State, and emigrating with his family to Kansas. He settled at Leavenworth, and immediately gave his attention to the planting of a nursery, the young trees for which he brought with him from Bowling Green. After a few years he closed out the nursery business, and henceforth devoted his entire time to the interests of fruit culture, on his farm two or three miles west of Leavenworth. The writer uses the phrase "interests of fruit culture" advisedly; for while others have given their time to fruit culture, and have made fortunes thereby, Dr. Howsley really made his grounds from the beginning an experimental farm. He immediately commenced collecting both old and new varieties of fruit, and especially of apples, with a view of testing their adaptability to Kansas climate and soil. His efforts in this direction have been of great service to the State. This work was prosecuted for the simple love of the pursuit, with the full realization that while it could only be done at great cost of time and money, there was no pecuniary return to be expected. Several years ago, Dr. Howsley commenced propagating new varieties of apples from seeds, selecting carefully his seeds from such known varieties as he deemed most hopeful. He has carefully carried forward his experiments in this direction, until some of the seedlings have begun to fruit. Those who have been informed of his efforts in this direction, have watched his experiments with much interest, and it is to be hoped that the work so well begun by our honored brother's hand will not be lost sight of by the friends of horticulture. His farm as it now stands is really experimental ground. The grafted orchard, with its three hundred or more varieties, and the seedling orchard and nursery, have a special claim upon the attention of the Society with which Dr. Howsley was so long associated.

Dr. Howsley manifested a deep interest in and peculiar adaptation to the study of the nomenclature of our fruits. To this he gave much time successfully, as he was able to adjust many cases hitherto involved in doubt. His merits in this direction, as well as others, were recognized by the American Pomological Society, as he held a place upon one or more of the committees of that Society from 1871 to 1879.

He has been an honored and influential member of our Kansas State Horticultural Society. He always took an active part in the discussions of the Society. He had the capacity to express his ideas clearly, and never left any one in doubt as to his position upon any important subject that came up for consideration. He was elected to the office of President at the annual meeting held at Manhattan, in 1870, and continued under reëlection until the annual meeting in 1874, at Emporia. He filled the chair with distinguished honor to himself and great satisfaction to the members. The increasing infirmities of age led him to decline reëlection in 1874. He continued to attend the meetings as often as his health would permit, and to the last manifested an abiding interest in the success of Horticulture. To the last he remembered his friends who have been associated with him in the work to which he devoted almost exclusively the latter years of his life. At the ripe age of nearly eighty-two years, he has gone to his rest, leaving behind him, in the trees which he has planted and the counsel which he has been able to give to the tree planters of the great Western Plains, a monument more enduring than brass.

RESOLUTIONS,

Adopted by the Board of the Kansas State Horticultural Society on receipt of the announcement of the death of Dr. William M. Howsley, March 7, 1880, at Central City, Nebraska.

Whereas, In the providence of God, our honored and beloved friend and co-laborer in the cause of Horticulture, Dr. William M. Howsley, has just been called to his final reward; and

Whereas, During his long and eventful life he has so constantly manifested his devotion to the cause of Horticulture, by his arduous work in connection with the National, State and local organizations, by his unceasing and painstaking investigations and experiments, involving often great personal sacrifice, and by the use, even up to the last days of his life, of his ever-ready pen; and

Whereas, He has from the beginning been an active member, and for four years President, of the Kansas State Horticultural Society: therefore, be it

Resolved, That we gratefully recognize the distinguished and disinterested services of our deceased friend and brother, and hold his untiring and unyielding devotion to the interests of fruit and tree culture and home adornment as in the highest degree worthy of emulation.

Resolved, That while we mourn his departure as of a chief fallen, and cherish his memory as of one whose highest ambition was to make the world brighter and better, we would fully acknowledge the beauty and power of that faith which our dear brother cherished through so many years, and by which he was enabled to look beyond the pleasures and sorrows of earth, to unending joys in the paradise of God.

Resolved, That we hereby extend our heartfelt sympathy to the bereaved companion of our deceased brother, to his children and other relatives, in this, their hour of deep sorrow.

Resolved, That the Secretary be hereby instructed to forward to the bereaved friends an authentic copy of these resolutions.

PROF. E. GALE, PRESIDENT,
G. Y. JOHNSON, VICE PRESIDENT,
G. C. BRACKETT, SECRETARY,
F. WELLHOUSE, TREASURER,
H. E. VAN DEMAN,
M. B. NEUMAN,
J. W. ROBSON,
} *Members of the Board.*

PROCEEDINGS

OF THE

NINTH SEMI-ANNUAL MEETING,

HELD AT BELOIT, KANSAS,

TUESDAY, WEDNESDAY AND THURSDAY, JUNE 17-19, 1879.

[NOTE.—This Society will not be held responsible for individual opinions.—SEC'Y.]

The Society assembled in the Opera House, at Beloit, on Tuesday, June 17, 1879, at 2 o'clock P. M., and was called to order by the President, Prof. E. Gale.

The session opened with prayer by the Rev. E. N. Thomas, of Beloit.

COMMITTEE OF ARRANGEMENTS.

The President announced as a committee of arrangements, Messrs. E. A. Taylor, Rev. Jas. Lawrence, and F. Wellhouse, who reported as the subject for consideration during the opening session, "Reports from delegates present on the indications for a crop of fruit, and present condition of trees."

H. E. VAN DEMAN, Allen county: Apples, peaches and pears are almost a failure; cherries, light; blackberries, very light crop — most of the canes winter-killed; strawberries, about half a crop; other small fruits, very light; grapes promise an abundant crop. Peach trees are making a fine growth; service-berry, productive and hardy.

HON. WELCOME WELLS, Pottawatomie county, (near Manhattan:) Apples will be one-fourth of a crop in my locality, peaches and plums nearly a failure. Pears, one-fourth of a crop; varieties fruiting, Flemish Beauty, White Doyenne, Seckel. Small fruits, excepting raspberries, light. Turner Raspberry has been quite satisfactory until within a few years; think it will succeed with proper treatment.

J. W. ROBSON, Dickinson county: Apple orchards in my county are too young to fruit. Peach crop very light, cherries a fair crop, strawberries and gooseberries very light, Doolittle raspberry very heavy, and the McCormick a fair crop. Kittatinny blackberry is carrying some fruit; the growth of canes is good. Grapes are very promising. Fifty per cent. of the fruit trees planted the past spring will fail. Do not attribute the cause of failure to a lack of vitality. Where trees were watered, and the bodies wrapped at time of planting, they have failed the least.

G. C. **Brackett**, Douglas county: I am quite sure, from the evidence, that the failure of trees planted the past spring is clearly due to a weakened condition of the tree, and this condition existed before they were taken from the nursery row. Such a drouth in the subsoil as prevailed during last autumn and winter, and followed by intensely low temperature in the winter, cannot fail to produce disastrous effects upon even our most hardy classes of trees and plants. We found this spring its effects most clearly indicated in the blackberry and peach. The canes of the former were generally dead to the snow line, and trees of the latter were in variable conditions. In some counties the trees were dead, and in others a very low condition of vitality prevailed. It was not drouth, nor the intense cold of winter alone, that produced such a condition, but the two combined brought on the injury. Trees cannot withstand an extreme of cold, with an absence of sufficient moisture to supply the daily evaporation. So, whenever the ground is lacking in proper moisture, you may well tremble for the safety of your trees and plants at the approach of an extreme of cold.

J. M. **Shepperd**, Abilene: I can only speak of my prospects. Apples will be a fair crop, considering age of the trees—four to nine years. Peaches scarce; blackberries are a failure in fruit this year.

F. **Wellhouse**, Leavenworth county: Apples, very light crop. The Rawles Genet fullest; a few Winesaps and Northern Spys. Pears, very light; have not been able to find any peaches—trees are injured; strawberries, half a crop; raspberries, fair crop; gooseberries, light crop; blackberries, failure. Tree-planting, the past spring, has not been fully successful. Losses will be twenty-five per cent. Do not believe that trees can safely pass through an extreme degree of cold in a dry soil. Grafts failed from the injured condition of cions used.

G. Y. **Johnson**, Douglas county: Apples—a fair crop of Rawles Genet; Ben Davis promising; Winesap bloomed full, but blossoms were defective, showing a weak condition of vitality in tree—no crop. I have a fine seedling, which has set a full crop; Grimes's Golden is a constant bearer. Pears, plums and blackberries failed; strawberries, very light crop; currants, light; raspberries, fair crop; service-berry, a full crop. My pear orchard was planted on an old stable yard. It made a very strong growth (four to six feet) during the last season. I became frightened, fearful of the blight, and planted the grounds thickly with sunflowers. The orchard escaped the blight.

E. N. **Thomas**, Beloit: Peach orchards are succeeding in this locality. Raspberries, a full crop; native varieties are more productive than the Doolittle, and a much larger berry than the McCormick. Blackberry canes were winter-killed, excepting a few which were protected with trees; those bloomed and set a full crop, which was ruined by the recent hail-storm.

Hon. Welcome Wells: Drouth is generally the cause of death to trees and plants in winter, and not the intense cold.

H. E. Van Deman: I am satisfied that trees were in a weakened condition when spring opened, and such condition rendered them liable to failure in transplanting.

E. C. Tracy, Franklin county: Apples will be one-sixth of a crop. Varieties carrying the most of the crop, Rawles Genet, Rome Beauty, Cooper's Early White, Missouri Pippin. Trees appear healthy. There will be no peaches. Trees over six to eight years old were generally dead or dying when spring opened. Pears scarce. Blackberry canes, wherever protected with snow, are fruiting. Raspberries failed; strawberries and cherries, light crop. My cherry orchard of sixty Early Richmond trees fruited heavily in 1878, dropped their leaves in July following, re-blossomed in autumn, and when the spring of 1879 opened, two-thirds of the trees were dead. Age of trees, eight years. Grapes promise a heavy crop.

Prof. E. Gale, Riley county: I am clearly of the opinion that trees were injured by the dry condition of the surface and subsoil during the past autumn. Such a condition of the ground could not supply the moisture necessary to meet the natural evaporation of trees, and from such exhaustion under such conditions followed a weakened vitality, and a consequent failure in the past spring's transplanting. The injury became apparent in the unnatural color of the cambium layer.

J. W. Robson: Plants extract from the soil the elements needed for their support. These elements exist largely in combination with water, which becomes, in the transmission of food to the plant by absorption, an indispensable agency. If the supply of moisture fails, then the plant fails in its food supply, and dies from starvation.

REPORT OF COMMITTEE OF ARRANGEMENTS.

The committee of arrangements reported as hours for opening sessions—Morning, at 9 o'clock; afternoon, 1:30; evening, 8. Hours for adjourning—Morning, 12 m.; afternoon, 6; evening, 10.

On motion, the report was adopted.

Adjourned.

TUESDAY EVENING.

President E. Gale in the chair. Exercises opened with a paper by J. W. Robson, of Cheever, chairman of the Committee on Botany and Vegetable Physiology.

FUNCTIONS AND STRUCTURE OF ROOTS.

BY J. W. ROBSON.

These are the parts of the plant on which it is chiefly dependent for the supply of the moisture which its growth requires, and they serve to fix it in the earth. That they absorb or suck up fluid with great rapidity, may be easily shown. Take any small plant that is growing in the soil, and immerse its roots in a tumbler of water: if the plant be exposed to the light of day, and especially if the sun shine brightly upon it, the water will disappear very much faster from the glass, than from one exposing the same surface, placed in the same circumstances, but without the plant; and if the specimen continue to grow and flourish, it will take up many times its own weight of water in a short period. Experiments made with four plants of spearmint, grown during fifty-six days with their roots in water, and themselves weighing all together but 403 grains, were observed to take up 54,000 grains, or about seven pints of water. Of the water thus absorbed, a small proportion only is retained within the plant, serving as a part of its food. The greatest part of it is sent off again from the leaves, by a process termed exhalation, and the rapidity of absorption is in part governed by the rapidity of exhalation. The latter is nearly checked by the absence of light, and accordingly, plants are found to absorb but little in the night, or in a dark room. If we examine the roots of any common fruit tree, we shall find that they subdivide and spread beneath the ground, very much upon the same plan as the branches above. Moreover, it will be seen that from the sides and extremities of these underground branches there proceed a number of delicate fibrils, and if the extremities of these be carefully examined, they will be found to be much softer than the rest of the structure. Now these fibrils are the true roots, and their soft, succulent extremities, which are called *spongioles*, are the parts by which alone they absorb or suck up fluid. This is easily proved. If a growing radish be carefully removed from the ground, and the fleshy portion be bent in such a manner that it can be covered with water, whilst the leaves and the tuft of fibers at the point of the root are not immersed, it will be found that the whole of this large surface does not absorb moisture enough to keep the plant alive. But, on the other hand, if this tuft of fibers be only so far immersed in the water that their points may touch it, while the rest of the root is above the surface, the plant will continue to flourish for days.

The fact is, that this absorption takes place with the greatest rapidity through soft, newly-forming tissue, and this is what gives the *spongioles* their peculiar power. They are, indeed, simply the growing points of the rootlets, which are constantly increasing in length, and which in this manner go in search, as it were, of the supplies of food, of which they have exhausted the soil that previously covered their extremities. As this growth continues, the tissue at first formed gradually becomes consolidated, and when it has become hardened it is no longer adapted for absorption in more than a very trifling degree; so that to the newly-forming point of the fiber this power is always nearly restricted. But in the young plant there is an interesting correspondence in all the portions of the root, for the soft roots, which are first sent down from the seed when it is commencing to grow, are capable of absorbing by their whole surface; and it is only when woody fiber begins to be formed in them that the power is restricted to their extremities.

The knowledge that the delicate fibers, proceeding from what are commonly known as roots, are the true and only organs of absorption, has an important practical application. It very commonly happens (too commonly among nurserymen) that, in transplanting trees and shrubs, where the roots extend a good way into the soil, enough care is not taken to preserve these; and the tree either languishes for some time, until it is able to form new spongioles, or dies altogether. It is seldom that, under the common treatment, a fruit tree will make much progress the first season after transplanting. It is often observed that the growth of roots takes place in the direction best adapted to supply them with moisture; and it has been supposed that plants possessed a kind of instinct or consciousness, which caused them to select this. Many of these cases, however, can be explained without having recourse to such a supposition; and it is probable that, with the advance of knowledge on this subject, the remainder will be also. In fact, to attribute such an instinct to plants, is to place them above the lower animals, which do not exhibit the power of making a choice of this kind. The most common cases are those most easily explained. A plant is in a dry soil, and it sends out its roots into a moister one; or it is in a garden pot, and its roots project through the hole at the bottom into the water which the pan below it may contain, or into the moist earth with which it may be surrounded. Now, this is explained upon the following simple principle: The addition which is constantly being made to the extremities of the fibers takes place in the direction of the *least resistance;* and when the roots are making their way through a hard, dry soil, the direction of least resistance will be that in which the earth is loosened by the flow of water — toward the source of that moisture; therefore, the growth of the roots will be in that direction.

The same principle has another curious application. Roots have been known to insinuate themselves into the crevices of walls, or even into chinks in the stones themselves, and to burst asunder the walls of these after some time. Now when a root meets with such an obstacle as this in its growth, it is turned aside for a time, and endeavors, as it were, to creep around it. But should a chink give the opportunity for the new tissue to be deposited without obstacle in its original direction, the root will find its way into it. The fibril will grow by the nourishment sent to it, and by its own absorption, until it can no longer increase without the separation of the walls which confine it; and this is accomplished by the force with which it imbibes fluid, which causes it to distend itself with great violence. This distention is of the same character as that of a piece of dry wood, when exposed to moisture.

For illustration of the foregoing explanations, we present a case of no infrequent occurrence, in which a tree growing on one side of a road sends out roots to a ditch or stream on the other—these roots dipping deep beneath the hard bed of the road, and rising again on the further side. It is evident by the slight percolation of water which will take place along this line, that the roots follow the same course. Many instances could be given where plants exist in full health and vigor, depending upon the moisture in the atmosphere alone for support. Many of the *orchidæ* (natives of South America) grow with their roots clinging and clustering round the branches of lofty trees, high up in the air, spreading themselves all over the surface, and hanging from thence like fringes to a great depth beneath. The famous banyan tree of the East Indies is a curious example of this kind. The aërial roots spring out from the upper branches, grow down to the ground and into it, they in the course of time becoming stems. One celebrated specimen possessed 350 principal trunks, and smaller stems amounting to more than 3,000.

We have two remarkable plants indigenous to our own State—the dodder (*Cuscuta*), which attaches itself to the stems of the wild artichoke (*Helianthus tuberosa*), round which it coils. When luxuriant, the dodder gives a strange, weird appearance to the herb on which it grows, covering a large cluster of it with a floating veil of reddish-yellow, leafless stalks. The mistletoe, found in the lower portion of the Neosho valley, grows on the oak and hickory along the river bottoms. These parasitic plants strike their roots into the bark and wood of the species they grow on, and feed upon their sap.

The grape-vine is another example; aërial roots will sometimes spring out all along the stems. In summer, we find aërial roots at the lower joints of the stalks of Indian corn; these in the course of time reach the ground, and help to feed and brace the plant.

A more remarkable case, however, is where roots direct themselves along a naked rock, to reach water at a distance of perhaps twenty feet. Another, a tree growing near the side of a well has sent down a root through a narrow chink in its side, which root, after descending many feet without subdivision, has thrown out a vast number of fibers as soon as it approached the surface of the water.

These examples serve to show another fact—that it is not in every case that we are to regard the parts of the axis which are above ground as stems, and those which are beneath it as roots. There is a tree peculiar to tropical climates, called the *Pandanus* or Screw Pine, in which the roots are always formed in somewhat of this manner. The stem is smallest at its lowest part and it enlarges considerably above; hence it would be very unsteady without some additional support; and this is provided for by the transmission of the roots, not only from the base of the stem, but at different parts of the upper trunk. These roots grow downward in the air, and are provided with a kind of cup, which catches the rain and dew by which they are partly assisted in their elongation; when, however, they have reached the ground, this cup falls off, and their extremities become true spongioles. When they begin to absorb nourishment from the earth, they increase greatly in diameter, and seem like so many assistant stems.

The general fact is, that the root is the portion of the axis which has a tendency to grow downward, toward moisture and away from the light; while the stem is the portion which tends to grow upward, into the dry air, and toward light. This tendency is manifested during the earliest period of the growth of a plant from seed. Two parts always originate from it—one of which, termed the *plumule* (from its resemblance, when just unfolding, to a little feather), is the rudiment of the stem and leaves; while the other, called the *radicle,* is the young root. The first of these exhibits from the commencement a tendency to grow upward, and the second a similar tendency to descend.

Roots are ordinarily distinguished from stems, not only by their direction, but also by the presence of the absorbing fibers, and by the absence of buds (which last is so characteristic of the stem), though we must not forget that the roots of some families of plants have the power of emitting wood buds all along the full extent of their surface. The Morello cherry, the wild plum, the poplar, the yellow locust, the double flowering almond, the blackberry, etc., are familiar examples. In general, however, the stem possesses the power of sending out root fibers from any part; as is shown by cutting off a slip from a branch and sticking it in the ground, or by bending down a shoot and layering it. These, if properly attended to, will form roots, and soon become new plants.

The wide-spreading roots of a forest tree do in reality consist but of bundles or collections of such fibers, strengthened by woody structure resembling that of the stem, and arranged in the same manner. The spread of the roots from the stem is usually greater than that of the branches; so that the rain which is prevented by the latter from falling direct upon the ground, is directed just to that part through which the root fibers are distributed, ready to suck it up.

The force with which the roots absorb fluid is very considerable. We note this when the sugar-farmer taps the maple, and see many gallons of sweet sap pour forth in a few hours; or when the cane of a grape-vine is cut through when the sap is ascending, a large quantity will flow out, and continue to do so for some time. If a piece of bladder is tied over the cut, it will soon distend with the fluid, and in a few hours will burst.

The question then arises: By what power do the roots thus absorb and force upward through the stem the moisture of the surrounding soil? The conditions requisite for this action are two fluids of different densities, separated by a partition of a porous character. This we find in the roots. The fluid in the interior is rendered denser than the water around by the presence of the substances secreted by the cells, and the *spongiole* supplies the place of the partition. Thus, then, as long as this difference of density is maintained, the absorption of fluid may continue. But if the rise of the sap is due to the action of an *inward* flow, there ought also to be a flow *outward*. This is found to take place; for if a plant be grown with roots in water, the fluid surrounding them is soon found to contain some of the peculiar substances they form, and which are contained in the cells of the plant. Thus a pea or bean would disengage a gummy matter; a poppy would communicate to the water an opiate impregnation, and a spurge (*Euporbia*) would give it an acrid taste.

Thus we see how beautifully and how simply this action, extraordinary as it seems, is accounted for, when its whole history is known, on principles which operate in other departments of nature. It may be asked, Why should not the *inward flow* take place when the roots of a dead plant are put in water? This question may be answered by another: Why does the wick of a lamp suck up oil only when it is lighted? The answer to both is, that it is only when the fluid already absorbed is in some way removed that absorption can go on. In the latter case, as fast as it is withdrawn by combustion, the lower part of the wick raises it by capillary attraction. In the former, as fast as the fluid is got rid of by exhalation from the leaves, the *inward flow* will keep up the supply; but if the demand is suddenly checked, (as when the plant is withdrawn from the influence of light, or its vitality is destroyed,) there is no room for any additional fluid within the system, and the absorption is checked also. When the upper part of the stem is cut off, the sap will continue to rise by the force of the *inward flow* in the roots, so long as the fluid within is of greater density than the fluid without. But that will soon cease to be the case; the action of the leaves being destroyed, there is no loss of fluid to keep up the force. These two causes, then — the absence of any demand for sap in the leaves, and the cessation of the condition necessary for the maintenance of the inward flow — are quite sufficient to account for its absence in the dead plant; and its performance soon becomes impossible for another reason — the decay of the soft tissue of the *spongiole*, through which it is performed.

Surprising as it may seem, we may as well state it here, that the roots of plants appear to have a certain power of selection, some of the substances dissolved in the fluid which surrounds the roots being absorbed, and others being rejected. Thus, if a grain of wheat and a pea be grown in the same soil, the former will obtain for itself all the *silex*, or flinty matter, which the water can dissolve; and it is the deposition of this in the stem which gives to all the grasses so much firmness. On the other hand, the pea will reject this, and will take up whatever *calcareous* substances (those formed of lime and its compounds) the water of the soil contains, these being rejected by the wheat plant. But we are encroaching upon the subject of plant food, which may be presented at some future time.

PRACTICAL REMARKS.

The roots of plants are liable to diseases, the principal one being *root-blight*, or, as it is popularly known among horticulturists, *rotten-root*. This disease is caused by an excess of moisture in the subsoil, or by a large accumulation of stagnant water. Carrying *this* off by thorough under-draining will secure health and a vigorous root growth. We have seen varieties of sweet apples, such as the Talman and Ladies' Sweet, badly affected by *rotten-root*, not at the extremities of the rootlets, but just at the junction of the roots with the collar of the tree. The only remedy in the way of cure is to prevent, by top-working two feet above the surface of the ground.

Roots have insect enemies also. The destructive influence of the dreaded *phylloxera* has been seriously felt in the wine-growing countries of Europe. The apple-root louse, or woolly aphis, has also done much injury to the orchards of southern Illinois. Some hold the theory that rotten-root is caused by this insect, but we think it is erroneous, from the fact that all the roots which we have examined show no trace of the presence of the *aphides*, which always leave knotty excrescences upon the roots as the result of their depredations.

Root-pruning has been universally practiced throughout Great Britain for the last sixty years, to produce fruitfulness in barren trees, and as a preventive of pear-blight—the theory being held, that if the exuberant growth of some varieties can be checked, and the trees compelled to finish their annual growth and ripen their wood-buds early in autumn, no blight will ensue.

Does the root of the stock affect the cion? is an inquiry which has always agitated horticultural circles. We do not believe it does; but we do believe, and know from ocular demonstration, that the cion wonderfully affects the roots of the stock. Take a strong one-year-old apple seedling, and divide it into four sections; graft one section with a cion of Soulard Crab (a variety of *Pyrus coronaria*), the second with Ben Davis, the third with Jonathan, and the fourth with Yellow Bellflower, and note the result. The roots of the stock grafted with the crab, when a year old, will be black, scrawny, and few in number, and all semblance to the roots of an apple tree will be gone, while the three other varieties of apple will have numerous healthy roots of a light yellow, or brown orange color, according to variety. Observant nurserymen, who handle large quantities of young stock, can readily distinguish the popular varieties of apples by simply looking at the roots of each; the difference in each being so great that varieties are easily recognized by the roots alone.

The degree in which vitality is sometimes retained by roots under conditions the most unfavorable, is one of the most interesting and curious circumstances in their economy. In the greater part of those plants inhabiting temperate climates, an apparently complete cessation of activity takes place every year. The leaves wither and drop off; the stem and branches are reduced to a state of death-like bareness, and all the changes in which life consists, appear to have entirely ceased. In some instances, the stems also die and decay, the roots only retaining their vitality; yet from these, with the return of the genial warmth and light of spring, a new stem shoots up, and new leaves and flowers are produced — in their turn to wither and decay. The torpor is not, however, so complete as it appears in those durable and woody stems which defy the winter's blast, for experiments have shown that a slight movement of sap takes place, even in a frosty atmosphere. But there are some plants which, even while in a state of active vegetation, are capable of being reduced to a state of torpidity, and of remaining in that state for almost any length of time, without injury to life. There is a species of club moss (*Lycopodium*), indigenous to Peru and the sand plains of New Mexico, which is liable to be entirely dried up, when deprived of water for some time. During the dry season it folds up its leaves and contracts its roots, so as to form a ball, which, apparently devoid of animation, is driven about hither and thither over these hot sands by the winds. As soon as the rainy season commences, it sends down its roots into the soil, and unfolds to the atmosphere its leaves, which, from a dingy brown, speedily change to the bright green of active vegetation. It can be kept on a dry shelf under the sashes of a greenhouse, or in a drawer, for months, showing no signs of life whatever, yet when placed in a vessel of water will begin to exhibit a wondrous change, by spreading out its fern-like fronds. We could cite numerous other examples, but we must forbear, as this report is already too lengthy.

Adjourned.

WEDNESDAY MORNING,

JUNE 18TH.

The President called the meeting to order at 9 o'clock, and opened the session with prayer.

The standing committee on Orchard Culture read the following paper:

ROOT GRAFTING.

BY F. WELLHOUSE, FAIRMOUNT.

In attempting to write an essay on root grafting, we are aware that we are entering a path that has been trodden many times, and that we are liable to become tedious, and to repeat things that you have often heard before.

Yet often as we have read articles on this subject, we have been able each time to gain some new ideas; and then, no two men do the work in all its details alike, however expert or experienced they may be. But when we consider the many thousands who do not understand the first rudiments of root grafting, we conclude that it will not only bear repetition now, but should be repeated in every journal in the land, until every tree grower shall understand it in all its details. We therefore offer no further apology for this intrusion.

There are said to be near one thousand different ways of grafting; yet nineteen-twentieths (and probably ninety-nine hundredths) of all the apple trees now growing are from root grafts. It is conceded to be the best and cheapest of all modes to propagate the apple. The first thing to be done is to procure the roots. If we have clean new ground, in good order, and can get fresh seed, we prefer raising our own roots; but in most cases it is best to procure the roots from those who make it a business to grow them. When we raise our own roots, we select good rolling prairie, such as we consider good corn land. It should be placed in the best possible condition, by frequent and deep plowing.

The seed is usually procured from the pomace at the cider mill. Some persons plant the pomace as it comes from the press, but we have never been able to obtain a good stand in this way, and prefer washing out the seed. To do this, take a common wash-tub, fill it two-thirds full of water, then shovel in some pomace fresh from the mill and stir it thoroughly, and the seed and pomace will separate—the seed sinking to the bottom, and the pomace swimming on top. Then shovel or skim off the pomace, and put in another lot. In this way, a man or boy will wash out about a half-bushel per day. Never use pomace that has soured or heated. Gilpin or Little Romanite furnishes a good plump seed, and in great abundance.

When sufficient seed is washed out, mix it with three or four times its bulk of clean sand, and put it in a shallow box, so it will freeze through. Set the box on the north side of a building, or where the sun does not strike it, otherwise it will sprout before the ground is in order in the spring. The seed is very liable to heat, and mixing it with sand is to prevent this. When the seed has been dried (which is necessary when shipped any distance), it should be soaked four to six days before mixing with the sand. It should remain in the sand during the winter, and should be watered occasionally.

In the spring, when the ground gets in good order, and after it is plowed and harrowed, mark it off from two to three inches deep, with the rows from two to three feet apart. A marker should be used that has runners, as these make the bottom of the furrows even, and pack the ground. Scatter the seed and sand evenly in the bottom of the marks or furrows, so as to get one and a half to two bushels of seed to the acre; and cover with a hoe;

if a large amount is planted, a drill can be used, by sifting or washing the sand from the seed, and then partially drying it.

During the summer, the ground should be kept perfectly clean and well loosened by culture. In the fall, just before the ground freezes—say about the first of November—take a good plow with a stout team and plow them out, running deep enough to get under the entire root. Pick them out of the dirt, and sort them into three classes; the third class should include all that are too small to graft—say all that are below the size of a common wheat straw. These can be planted again for another year, but *we* throw them away. The first and second class should be tied into bundles of from two to three hundred in each. Cut off the tops, and pack them in the cellar in damp sawdust, so they can be got at readily in the winter.

The next thing in order is gathering in the cions. These should be taken from trees that are known to be true to name. Some prefer taking them from bearing trees, claiming that they come into bearing earlier than when taken from nursery trees. We do not think it makes any difference as to their bearing, but always cut from bearing trees if we can, because then we know them to be correct. The current year's growth should always be taken. Cut from the outside limbs, where they get plenty of sun; the buds are more fully developed, and the wood better matured, than where they are shaded. Tie them in bundles of three to five hundred in each; write the name on a lath or piece of board, and put it in the top end, with the name sticking out; set them on end, large end down—in the cellar, close together. Fill in sawdust around them until they are nearly covered. Have the name above. The best time to cut cions is late in the fall, before any severe freezing. Wood that is not well matured is always injured and sometimes killed by severe freezing; but well-matured wood can be cut any time in winter.

We now have our roots and cions packed away in the cellar, and have nothing further to do until after the holidays, except to get our grafting-tools in readiness.

For a grafting-knife we use old razors—finding better material in them than in any other knife. To keep them sharp, use a Turkey oil-stone. This gives a keen, smooth edge, which is very essential in a grafting-knife. Never use a rough whetstone: a smooth, clean cut heals much more readily in wood, as well as in flesh, than a rough, ragged wound.

For a grafting-table, use one made something like a camp-stool, with the back higher than the front. Make it about four feet long and two feet high, with common drilling cloth for the top. Two hands can work at one of these. These tables are easier made, and are better than any we have used; the top being cloth, roots and cions are more readily picked from them than from a board surface; and they are very light, and can be folded up and set away when not in use.

For tying of the grafts, use No. 8 cotton carpet-yarn. This should be wound on spools similar to common thread spools, but about six inches long. On each of these, wind about one "hank" of the yarn. Then take a common dinner-pot holding about two gallons, put it on the stove, and put in six pounds of rosin and two pounds of tallow; keep a slow fire until it is all melted, and put in as many spools as is desired; let them soak until they readily sink, or until bubbles of air cease to rise; then take them out. This yarn is put up in five-pound packages at the factory, which is sufficient to tie one hundred thousand grafts. Any comfortably-warm room will do to graft in. A pot or basin of water should be kept on the stove, which by the steam produces a moist atmosphere, preventing the roots from drying out.

Having everything ready, commence grafting by the first of January. The evening before, wash a sufficient number of roots for the next day's work, leave them in the cellar, and by morning the water will be dripped off, and they can be handled without wetting the hands. When the room is warm, bring from the cellar a bundle of cions and roots, and place them on the back part of the table. Take a cion in the left hand, with the butt end between the thumb and forefinger, and the top end under the arm; make a sloping cut about one inch long, from one side to the other, with the knife in the right hand; then reverse the edge of the knife, and cut into the face of the first cut or slope from one-third to three-fourths of an inch, thus forming what is termed a "tongue;" draw the cion forward five or six inches, and cut it off. Follow this method until the whole cion is used up.

The root we take in the left hand, the same as the cion, with the lower end of the root under the arm, and make the first cut at the collar, or where the root and top join. The sloping cut and tongue are made exactly similar to that in the cion, except that the slope is upward, and in the cion downward. We now draw the root forward two to three inches, and cut it off; then make another cut for the next, and so on.

After a sufficient number of roots and cions are cut, we take a cion in one hand and root in the other, and stick them together, fitting the tongues into each other—selecting the root and cion as near of a size as we can; then take the graft in one hand, with the root in the other; slip them together, so that the tongues on each interlock; hold the root and cion together with the thumb and finger, and with the right hand take the waxed yarn and wind it firmly around the graft from one end of the cut to the other, making from eight to twelve turns; then break off the thread, and the graft is complete.

When we get fifty grafted, we take them in the left hand, with the roots to the right, and after getting them even at the top wind the waxed yarn and wind it six or eight times around the roots, as near the end as we can, and as firmly as the thread will stand; then turn the tops to the right, and wind it round them the same as with the roots. Bunches of fifty are about the right size for convenient handling, and when well wrapped at each end will bear fair handling with safety.

Pack them in boxes about three feet long, two feet high, and twenty inches wide; put two to three inches of wet sawdust in the bottom; put a layer of the bunches of grafts on each side, with the roots on the inside and the tops to the sides; level up with sawdust; then another layer, and so on, until the box is full. Between varieties in the same box, place shingles, with the name written on each shingle.

Grafting can be done best by three or more persons — one to cut the roots, one to cut the cions and stick them together, and one to wind the yarn around.

If the grafting is done in January and February, and the grafts are properly cared for, they will be nicely knit together by planting time. They should be planted out as soon in the spring as danger of freezing is over, usually the fore part of April.

Now one word in regard to long and short cions and roots. We have been trying different lengths of cions on a small scale for several years, ranging from five to twelve inches in length, and, as far as we can see, there is no difference either in stand or growth. We have rows standing side by side, one grafted with cions five to six inches long, the other with twelve inches, and I think it would be impossible to detect any difference in size at this time. With roots, we have had as good success with those from two to three inches in length as with larger.

Now another word in regard to the influence the root and top have on each other. We believe that with root grafts, so long as there are no sprouts from the root, the graft has the root under complete subjection, and completely controls its character; while on the other hand, the root has no perceptible influence on the top or graft. With *top* grafting, the root maintains its own character, and sometimes exerts a marked influence on the graft, while the graft has no visible influence on the root.

GRAFTING PEACHES.

PROF. E. GALE: In grafting the peach, it is important that the cions should be cut early in the fall, before any severe cold weather, and packed in damp sawdust or other material, to keep them fresh; also, take up the roots to be grafted, and pack in same manner. The process of grafting is the same as for other fruit trees. Insert the cion at the collar, (the line dividing root from top.) In planting these, set the place of union between cion and root below the surface of the ground. Peach grafting is not very satisfactory in results.

The art of fruit culture is so far perfected, and the demand for choice fruit so imperative, that a seedling tree can scarcely be tolerated; and yet seedling trees of some kind are found every year springing up about all places where fruit is grown. These are, in a majority of cases, valueless; but if their tops could be changed, they would not only be an attraction, but a source of profit in coming years. How can this change be made? We will suppose the trees are anywhere from one half-inch to three inches in diameter at the crown. The grafting is to be done at the crown, so as to replace the entire top.

The tools needed are a sharp knife, a sharp chisel at least an inch wide, a light mallet, a handful of twine, and a shovel to remove the soil from the base of the tree. We will now suppose we have a cherry tree an inch or more in diameter which we wish to graft. The soil is first to be removed from one side of the tree, and a deep, smooth incision made into the side of the trunk. A cion is to be selected as long as can be conveniently secured, say from one to three feet in length. The lower end should be wedge-shaped, as in common cleft-grafting, taking advantage, in making the wedge, of any curvature of the cion, for convenience in fastening to the tree. The cion should then be inserted, and pressed firmly to its place. Fasten them securely to the body of the tree, or to one of the branches, if more convenient. Then replace the soil about the body of the tree, taking care to press it very firmly about the base of the cion, and heaping it a little at the same time. When the cion gives unmistakable evidence of growth, and not until then, cut the old tree down to a mere support for the graft. This support should remain until about the 1st of August, or, in some cases, even later, care being taken to keep all suckers from the old tree. The support of the old tree can now be dispensed with, and we have a young tree of the variety desired. In making the cut on a long cion make it as long as can be conveniently, and cut off only a thin shaving, in place of the usual method of cutting across the cion from one side to the other. This gives a much larger surface of the cambium layer in contact, making the connection much stronger than by any other method. The usual tongue is formed on the cion and root, as in other methods of grafting. The tying is in the usual method, but more carefully and firmly than for short grafts. When the roots are small it is a decided gain to use one on each side of the cion.

J. W. Robson: All species of conifer can be grafted by the "saddle" process. When the Deodar cedar was first introduced, and trees of one foot in height were worth $100, they were propagated by grafting. My experience with top-grafting has not been very satisfactory.

Adjourned.

WEDNESDAY AFTERNOON.

President Gale in the chair.

HOW AND WHAT TO PLANT.

F. Wellhouse: We want to find a variety of peach that will endure 25° below zero without injury, and as tardy in its season of blooming as the Rawles Genet apple. Then we can raise peaches every year. The Ben Davis apple tree is extremely hardy, but I don't like the quality of its fruit. If we could only find a list of fruits that would be productive, and iron-clad in tree, our shoulders as horticulturists would be relieved of a great burden. Can we reach it? is the question.

WM. CUTTER, Junction City, Davis county: The Ben Davis is extremely hardy in tree; with me it is 'hopper-proof. Rawles Genet is a much better fruit in quality, and its peculiar feature of late blooming is a great advantage. Winesap is good, borne on young trees, but becomes inferior with age—and to me an inferior Winesap is a most worthless fruit. Jonathan is very desirable in localities. Missouri Pippin stands high in some localities; has not been sufficiently tested in Davis county. As to plums, I don't believe that a variety exists which is proof against the attack of curculios. I find that fumigating the fruit with coal-tar smoke is the best means of protection. Of cherries, the Early Richmond is the only variety that affords us much fruit. The sweet, or as they are sometimes called, "Eastern varieties," are absolutely worthless in my county, and men had better throw the money designed for their purchase away, and so save the expense of planting them.

J. W. LATIMER, Pleasanton, Linn county: The Bentley Sweet (apple) has been a constant bearer in my county.

E. A. TAYLOR, Beloit, Mitchell county: I have here a twig of the Cooper's Early White, cut from a four-year-old tree, which is loaded with fruit, as you see this limb. The growth of tree is good, and the fruit does not drop prematurely. I would like to have the experiences of those who have grown it.

F. WELLHOUSE: The Cooper's Early White was introduced by —— Bosley, of Leavenworth, from Illinois, in 1855, and first planted in Kickapoo township. It has proven to be one of the most productive varieties—a fine cooker, even when quite small. It requires good culture. The Missouri Pippin I have kept as late as March; and the Ben Davis will keep forever—therefore it is the most valuable of all, as a late keeper.

HON. WELCOME WELLS: I obtained the Cooper's Early White of Mr. Wellhouse, in 1872. It is productive and profitable. I am losing confidence in the Winesap. Rawles Genet still holds a good character, but will probably deteriorate. Ben Davis is one of the best, as its beauty will insure a market. Gramar Pearmain has been a constant and profitable bearer. Lowell is a most excellent bearer and of good quality. Sops-of-Wine is desirable for shipping purposes. I have sold $10,000 worth of apples from my orchard of 2,500 trees, within the past three years, and can pick out 500 trees as the number from which I realized that amount. Most of it had been produced by the Winesap, Rawles Genet, Jonathan, Willow Twig, Sops-of-Wine, and Ben Davis. Bailey's Sweet has been successful.

J. W. LATIMER: The Duchesse of Oldenburg has been quite profitable in Linn county. Peaches have been a success every year until this.

HON. WELCOME WELLS: My experience with peaches has been similar to that of Judge Wellhouse.

H. E. VAN DEMAN, Allen county, has had seven good crops of peaches during the past nine years.

WM. CUTTER, Davis county, has had three peach crops during the past five years.

FRAUDS AND HUMBUGS

Received the strongest condemnation of the Society, in which the proprietors of the Hill Home Nurseries, of Tadmor, Ohio, and Rose Hill Nurseries, of Iowa City, received proper handling for their efforts to swindle the people of the State with such frauds as the Conover's Seedling Grape, and the fallacious statement made to secure trade in Russian Hybrid apple trees, and many other worthless articles. One Fullhart, who has been canvassing the western counties, claiming an agency for some of our home nurseries, received a full hand of censure for his attempts in selling the Lombardy and Bloodleafed peaches as valuable for fruit; also, such frauds as the Sweet rhubarb, Tree strawberry, Grapevine raspberry, and monster pears, "originating in the swamps of France." It was generally conceded that, if our people were willing to be duped by such transparent frauds, it might prove the best method for sharpening their intelligence for the future. The wholesome advice was general, that it is wise to deal with the nearest home nursery, and give no heed to the long-tongued, windy agents, with their finely-colored fruit books, and bottles of specimens of fruit grown otherwhere than in Kansas.

HOW AND WHERE TO PLANT.

WM. CUTTER: Plant in spring, before the buds swell. As seasons vary, no time can be fixed for a period of years. The time of each year must be determined from the contingent conditions under this head. The following communication from Mrs. M. L. Still, of Beloit, was submitted by the Secretary:

> **MR. PRESIDENT**: I would like to ask the Society a few questions for my own information and that of others.
>
> 1. What time during the spring months is the best for planting fruit trees and vines?
> 2. At what time in the spring is it safest to *transplant*, early or late in spring? My own impression has been that the time of the swelling of the buds was the period of the greatest vital energy, and hence the one which the plant could best bear the shock of removal, but I do not wish to generalize too hastily, and would like to hear the opinions of others.
> 3. Is it well in heeling-in for spring planting to bury both root and branch?

PRESIDENT: Early fall planting can be made successful. Roots will callous by the warmth of the subsoil, and sustain the evaporation from the top, while late fall planting will fail.

HON. WELCOME WELLS: Procure trees in autumn, and when properly prepared for planting, bury them root and branch in the ground. Plant as early in the spring as weather will permit.

J. W. LATIMER: I always plant trees in autumn, if the ground is moist and in good condition.

PRESIDENT: Mr. Latimer is located over 100 miles south of this point, and there is a material difference in the conditions of the two localities.

MRS. STILL: If the ground should continue dry until late spring, would it be advisable to hold the trees in the trenches?

SECRETARY: I should not wait for rains, but would give the roots a heavy coating of mud; plant as early as possible, mulch heavily, and wrap the bodies with paper. Autumn planting is very risky in this climate.

Adjourned.

WEDNESDAY EVENING.

The President called the meeting to order, and invited Hon. W. Wells to the chair.

PRESIDENT GALE'S SEMI-ANNUAL ADDRESS.

Ladies and Gentlemen of the State Horticultural Society, and Citizens of Beloit: We shall almost need to be reminded that we meet to-day further toward the setting sun than ever before, in one of the youngest among the great sisterhood of Western cities, for we can scarcely make ourselves believe that this beautiful city has sprung up as by magic in the midst of this charming valley within the last decade, and that where a little while ago the lone waste of the wide prairie could only be seen we are to-day bidden welcome to elegant homes by an enterprising and cultured people.

We are debtors to our race. No man liveth to himself. It matters not whether our obligations are acknowledged or rejected, they still rest upon us with the certainty of fate. We owe it to our race to make the conditions of life brighter and happier, to cheer and gladden the weary walk of man, and to make the most of a world over which the Infinite Father pronounced his benediction of "very good" when the morning stars first sang together. It is our duty, then, to use, to combine, in unnumbered ways, the elementary laws of nature, and especially of life. When we come to study the domain of life, we find ourselves in a limitless field. We may see it here as finite, but it reaches on to the infinite life. We sometimes think that by the aid of the microscope we have got down to the lowest round of the ladder where life first buds out from dead matter. But who among us is even of this quite sure? However this may be, no man will here be able to measure the upward strides of the life that takes in at last the Infinite Father of all being. We may study first the simple organized cell which carries on all the essential functions of life. It is only a homogenous mass, destitute of distinct organs, and yet it lives. Watch it for a little time, and the one has become two, and the two four, and the four eight; and so we may go on until lost in a progression past the power of computation.

Vegetable and animal life hold the closest and most important relations. There is not only a very interesting interdependence, but there is also a very important mutual dependence, upon surrounding nature. Hence we do not simply suspect, but we know, that these two forms of life are only separate links in the great chain of created being. This relation is so intimate that the development or improvement of vegetable life must result in the improvement of animal life. The growth of the one is the growth of the other. The culture of the vegetable kingdom must result in the culture of the animal creation. This is especially true of that part of the vegetable kingdom ranged under the term horticulture. Can this be true? say you. If you doubt, consider just for one moment the influence of horticultural pursuits upon the family and upon the people. What, for example, is the influence of New York park upon those who can enjoy its retirement and beauty? Bring together the charms of landscape gardening; of flowers and fruit around a home, and do not these educate and beautify the minds of the dwellers among shrubs and flowers, as well as make the surroundings more lovely? We must admit that there exists a very close relation between the development of vegetable and animal life, and that the possibilities of the latter depend much upon what may be attained in the former. It is safe to conclude also that this relation of dependence reaches not only to the physical, but also to the spiritual being. The surroundings of nature may be made important helps to a happier and brighter life. In view of the relation which horticulture holds to life, we conceive there is opened before us in our chosen avocation one of the grandest and widest fields for experiment and observation in the whole round of human industry.

We cannot be, we have no right to be, content with present returns and present attainments. Every department of horticultural investigation should have "Excelsior" written over its gateway as with a pen of "iron with lead in the rock forever." He must be a novice indeed who supposes that man has gone as far in the perfecting of horticultural productions as can be desired. There are many questions demanding our notice. Among these are the production of new and improved varieties; improvements in the modes of propagation; the means of protection against unpropitious climatic conditions, and against that vast host of insect enemies that throng on every side; the best mode of protecting our friends among insects and birds from destruction; the attainable and most desirable modes of diffusing horticultural knowledge. All these are questions of primary moment to-day.

In the production of new and improved varieties of vegetables, plants and fruits, we have a wide and important field, well worthy our time and thought. We are encouraged in this work by the wonderful triumphs of the past, and we are in a measure urged to it also by the peculiar demands of our own clitame. In all directions the most encouraging results have attended the earnest efforts of intelligent cultivators. Especially is this true within the past fifty years. In this respect horticulture has not fallen behind the other departments of industrial life. While the discoveries of the age have been almost startling, we are inclined to believe that the friends of horticulture have kept fully abreast with this sleepless march of improvement. For example, compare the shrubs and flowers with which we can and ought to adorn our homes with those which the florist of even thirty years ago offered our fathers and mothers. How remarkable the contrast! Compare, again, the fruits which are now offered in our markets with those which were produced forty years ago, and we cannot fail to be impressed with the idea that while there has been a great improvement in quality in many instances, the better varieties of the old have been far more widely cultivated. And it is also a matter of great moment to be able to state that there is vastly more good fruit produced than even twenty years ago. Within the memory of some of us there were growing in the East vast numbers of orchards producing only natural fruit, and that of very inferior quality. All this has changed. No intelligent cultivator now thinks of relying upon chance for the production of good fruit. We are all familiar with the special and successful results that have attended the production of new varieties of strawberries, raspberries, grapes, etc., and are also reminded that these improvements have given a healthy impetus to the planting and culture of the same. Now, while we do not expect to see cherries as large as peaches, nor strawberries rivaling in size Northern Spy apples, we do expect to see the fruit of the future combining more of those qualities which in their place are desirable than can be now found in any of the fruit of the present. We may reasonably anticipate much in this direction. And the more carefully we survey this field, the more we shall see that requires improvement. We may not be able to materially improve fruits and flowers in certain directions, but we can hope to combine the excellences of the many in one. We are all aware of many desirable qualities that enter into the character of some of our fruits combined at the same time with objectionable qualities. Now it is our work to combine the excellent and eliminate the undesirable qualities. It may take a long time to do this, but in many instances it will be done by the production of new varieties that must take the place of those that are now held as the popular fruits of the day. We think that great results may be anticipated as following the work of this Society, in seeking to encourage the production of new and desirable varieties of fruits, vegetables and flowers. We can only express the hope that our Society will take an immediate initiative in this direction. There are among us those who have time and taste fitting them to undertake work of this kind in special directions, and hence this work will naturally divide itself according to the taste and circumstances of individuals. While one person will take this field of inquiry, another person will as naturally occupy a different one. As illustrating how this work will divide itself, let us note a few items in our work. There are many desirable qualities which we much need to have combined in our apple list that we do not find there to-day. The same may be said of pears, peaches, plums, cherries, grapes, raspberries, strawberries. And we might go further and include in the same list the nut trees, as the hickory, pecan, piñon, and even possibly the black walnut, the persimmon and mulberry. It is evident, without saying anything of shrubs and flowers, that no one person will have time for all these. But circumstances and taste will frequently dictate where our time and efforts may be most profitably centered. It will probably be found out of the question to successfully assign these several fields to special committees named by the Society, from the very obvious reason that men suited to this kind of work are self or providentially appointed—that is, they are impelled to it by inclination, taste or circumstances, of which a stranger must at first be ignorant. But we can certainly do this—that is, give this class of men all the direct and personal encouragement which the action of the Society can secure for them.

There are peculiarities of climate which often render the question of *propagating desirable varieties* a perplexing one. Hence, modes of propagating, being rendered special by our peculiar climate, probably demand more attention than we have hitherto given to them. Robert Douglas learned years ago that partial shade and dry sand would protect seedling evergreens during the hot summers of Illinois, and acting on these hints of nature the result is a gigantic business of almost untold value to the great West. It is not improbable that there are lying around loose some simple facts in vegetable physiology which our peculiar climate demands some wide-awake horticulturist to combine in the interests of man. As the telephone results only from the combination or application of long-known laws, so there may be well-known laws of the vegetable kingdom which when applied to the multiplication of individuals may some day produce great changes in the horticultural world.

I wish also to urge upon your attention the fact that the peculiar *climatic conditions* of this great central valley demand more of our attention than hitherto. The mysteries of our climate confront us at every step. What we can and cannot do depends upon great meteorological laws over which the modifying power of man, to say the least, is very feeble. A more thorough understanding of these laws would, I am confident, save millions to this Nation during the next decade. We may flatter ourselves that Dame Nature will fail to bring in her accounts, or forget to strike her balances; but as time rolls on we shall find that she is as remorseless as the grave, and that in the round of years she never forgets. We believe that the interests of humanity demand that a thoroughly mapped and carefully prepared report of the peculiar climatic conditions of the vast region from the Missouri river to the mountains, with its possibilities and probabilities clearly set forth, should be scattered broadcast over the land. The claims which this subject has upon us grow out of the fact that our interest in it is second to that of no other class of men.

There is still another matter, the manifest importance of which is greatly enhanced by every year's experience—that is, the mode of *protection against insect enemies.* We have already been taught most effectually that we can hardly be too enthusiastic in the pursuit of this subject. We occasionally meet men professing to have some knowledge of horticulture who regard this subject as one of little moment, but you will run no great risk in writing down these men as horticultural failures. It is certain that there can be no intelligent horticultural success without a thorough knowledge of the perils that threaten our work on every hand. For a little time in the newer portions of the State we may not be seriously injured by their presence, but they are sure to come. To deny their power for evil only shows culpable ignorance, and to neglect any possible precautions against their devastations is only a mark of indolence and shiftlessness which merits the sharpest censure. We ought, then, to take measures to encourage a more thorough and generally disseminated acquaintance with our insect enemies. And the same may be said of the entire range of horticultural knowledge.

But *how are the people to be taught?* The answer to this question is certainly very dimly apprehended by those who make teaching a profession. Those who are most deeply interested in our occupation are not agreed here. All are ready to confess that the people need teaching. There is a painful want of knowledge upon the whole subject of horticulture among the large majority of our rural population. As evidence of this, go among the farmers and see how few of them are successfully cultivating even the small fruits for family use; how few of the number have grapes; how many are destitute of apples, pears, and even peaches, that grow almost spontaneously. Look again, and see how few have laid out their grounds with any reference to artistic beauty, or even the simple laws of convenience. This condition of things does not ordinarily arise, as some would have us believe, from the poverty of the people, but from their ignorance. There is no department of improvement where money has been thrown away more profusely than in the direction of horticulture. It is hardly possible to count the thousands that are annually wasted through the want of a thorough knowledge of what should be done in the planting of trees, shrubs and flowers. The great trouble is not that the mass of our rural population want the means to improve their homes, but in the fact that they do not know what to buy, how to handle and how to improve. Hence thousands each year become the facile dupes of crafty and unscrupulous dealers. Hence we incline to believe that nine-tenths of the investments of time and money so far made horticulturally in this State must be carried to the loss side in the final footing-up of results. A large per cent. of this loss in the earlier history of the State could not perhaps be avoided, but the experience of twenty years should throw a strong safeguard around us. Some knowledge of our peculiar climate has been acquired, and the demands of our soil are so well known that there are a few at least who need hardly go amiss. The improvements so far made only impress us with the idea that the principles of a correct taste in the laying out and ornamentation of grounds should be more generally understood.

The *means necessary* to secure a more general diffusion of horticultural knowledge should, I believe, engage the serious attention of this Society. We should recognize and encourage every instrumentality that can promote this object. The newspaper press has done a great work in this direction, and the publication of the Transactions of this Society has aided nobly in this work. The rural press is doing a work of which we have reason to be proud, and it will always be a pleasure to recognize its work. But we have no right to be satisfied with what the press has been able to do or will be likely to do in the future. The press aims chiefly to educate the adult population; but if we are to attain the cherished object of this Society, we must educate the children. It is our right and duty to press once and again upon the notice of our school teachers, and those who have the superintendency of our school system, the importance of giving horticultural instruction in our common schools, high schools, and, consequently, as preparatory to this, adequate instruction in this direction at our normal institutes, normal schools, and State University. You will doubtless, as you reflect, come to regard this matter as more truly fundamental than any other which will be likely to come before you. I believe that we can safely assume there is no other class of men who from the nature of their pursuit are so thoroughly interested in the culture of the rural classes as we. Horticultural tastes will not grow among an ignorant people. We are from the very nature of our business deeply interested in the universal diffusion of knowledge. Our motto must be, *the culture of the masses.* We owe it to our children to insist that their culture should be broader in the direction of rural life than that which was given to us. To begin, then, we may urge that elementary instruction in horticulture should be given in our common schools. These schools are the only ones which are offered to the great masses of the people. Scarcely one in a thousand can go beyond the course of study taught in the old district school-house at the cross-roads. It is here then that we must begin our work in horticulture. We must give the teachers to understand that the stereotype curriculum of the old district pedagogue, consisting as he was wont to say of "larning the three r's—that is, reading, riting and rithmetic," will not answer for the rural classes any longer. I regret very much to learn, by the report of a teachers' convention lately held in the eastern part of the State, that this class of men is not quite all dead yet. We will gently hint to these men at first, that they who pay the taxes demand a broader culture than has hitherto been offered for their children. And if I could raise my voice so as to be heard in the State Teachers' Association now in session at Lawrence, I would emphasize the demand for a wider range of instruction by the intimation that, though they may not hear us to-day, the time is not far distant when they will either recognize the real wants of the people or be swept from their places as by the hand of God. We must make the people to know that we do not appoint committees and pass resolutions for the fun of the thing, but that "we mean business." Radical changes of the kind here urged involve difficulties, chief among these being the incompetency of the teacher. But we are to remember that when this demand is made really in earnest the objection will vanish. It is for you to determine whether this subject demands at our hands further consideration at this session. It is obvious that this work must begin by the instruction of the teachers of our common schools. In order to reach this, a short course in the studies belonging to the department of horticulture will be required in our teachers' institutes; and this course, supplemented by the perseverance and energy of the more intelligent of our teachers, will bring this class of instructors to the front. We shall make sure of the earnest coöperation of the more advanced teachers. While some determination may be required on the part of the friends of this measure, we cannot for a moment regard the final result as doubtful. Old fogies will scoff, and some fossilated Rip Van Winkles may open their sleepy eyes in amazement, but the world moves, and the objects which we seek after will be obtained. It is then with a courage wrought out of past experience that we look on to the future, hopeful, yes, confident, that as this Society has done good service for the State in the past, so in the coming years we anticipate yet grander results.

COMMITTEE ON FINAL RESOLUTIONS.

This committee was announced as follows: Geo. Y. Johnson, J. M. Shepperd, H. E. Van Deman.

Meeting adjourned.

THURSDAY MORNING,

(JUNE 19TH.)

President called the meeting to order, and opened the session with prayer. Subject announced for consideration,

ORNAMENTAL SHRUBBERY AND TREES.

J. W. ROBSON: The Deutzia, Hydrangea, and Weigelia are very desirable. Should be mulched during the hot season. Sweet Brier, on account of its fragrance, should be in every garden. Several varieties of honeysuckles and roses in profusion. For borders, the many-colored verbenas are the finest plants. Flower-beds should be prepared in the autumn.

G. Y. JOHNSON: I have found in my rambles, a native cream-colored Larkspur, which is beautiful; I cannot give its scientific name. It makes no difference; for I hardly think that you would be any the wiser if I could, as confusion comes from the use of such big words generally used by our professors. Just as fine foliage and flowering plants can be found indigenous to our State, as many of the "far-fetched" and dearly-priced plants found in our nurseries. The Woodbine, Bitter Sweet, Spindle Tree, Staff Tree and Red-bud, are all fine for the yard, and should be transplanted early in spring. The common Sumach affords a very attractive foliage. The Indian Arrow-Head and Button-Ball are desirable. The Buffalo Locust found on our prairies rivals the Persian Lilac, considered so choice. The native perennial Phloxes, Prairie Lily, Sweet Sensitive Brier, are all choice, and will cost only the little time needed for transplanting. Here is a very cheap collection, but one really fine and beautiful. In the arrangements of a flower garden, do not aim at any formal outlines. Let everything give the appearance of ease and grace—with effective contrasts. Another point: never be guilty of discouraging even the slightest indications of a desire to attain to floral adornment, no matter how awkward the arrangements. Let your words always be of cheer, and intended to direct to better and more tasteful forms in beautifying homes. Now as I have given you some of the homespun points in this subject, I hope our college professors will not be backward in dealing out to us some of the refined points of the science.

H. E. Van Deman: The Green Ash is a very ornamental tree, and is generally found growing along the streams. The Button-Bush grows naturally on wet land, but will thrive upon dry land. Every home should have a nice lawn in front and around it. Kentucky blue-grass forms the best lawn. Junipers, American Arbor Vitæ, and Dwarf Box are failures in this climate. The Red Cedar for an evergreen, and the Mountain Ash, succeed, and are fine varieties for ornamentals. The cedar can be shorn into various truly ornamental forms. The proper season for such shaping is at the time the growth starts in the spring.

J. W. Latimer: I have American Chestnut trees seven years old; are as easily managed as an apple tree. American Arbor Vitæ and Balsam Fir succeed in Linn county, as also the Catalpa.

J. W. Robson: Common Catalpa does not thrive to suit me in Dickinson county. The Speciosa variety, or commonly called "hardy variety," is more rapid and satisfactory.

G. Y. Johnson: American Arbor Vitæ and Norway Spruce succeed on a black deep soil, having a porous subsoil. I am no admirer of the close, shorn evergreen. I prefer the form given by subordinating the upper limbs and allowing the lower to extend, which gives the pyramidal form with a wide base. Evergreens require continual mulching.

Wm. Cutter: I have the Mountain Pine, which somewhat resembles the Black Austrian, which is hardy. I have also received from the Rocky Mountains a species of the trailing Juniper which is very dwarf—silvery leaf like the Balsam Fir, and is hardy in my locality.

H. E. Van Deman: White Cedar and American Arbor Vitæ are identical; this with the Spruce are natives of swamp, marshy lands, with gravel and sand subsoil.

President: The question of adaptation comes in here with all its complications. Upon our eastern border we find the chestnut thriving, while the reverse is the result in the western counties. Evergreens succeed at Chanute, Neosho county, and fail at Manhattan, Riley county. Locality has its effects, and we must consider all the surroundings.

H. E. Van Deman: The evergreens at Chanute, alluded to by our President, were saved in 1874 by a constant watering and mulching.

The President, by request, announced as a Committee on Hedges, F. Wellhouse, Wm. Cutter and Welcome Wells.

Adjourned.

THURSDAY AFTERNOON.

President Gale in the chair. Report of Committee on Hedges was called for.

REPORT.

Your Committee on Hedges report: That the Osage orange is the only plant we can safely recommend for general purposes. Honey locust is recommended for trial, and willow for ground too wet for the Osage orange. For ornamental hedges we recommend the red cedar as most preferable, and privet for trial on a small scale. Your committee are of the opinion that the arbor vitæ and hemlock are unfit for such purposes. We also consider it hazardous to the success of a hedge-row, to allow shade trees to be grown near, or in the row.

DISCUSSION.

Hon. Welcome Wells: I have tried to grow shade trees in hedge-rows, and find they starve out the near plants.

Wm. Cutter: My observations lead me to the same conclusions with Mr. Wells.

President: Can any one inform us how many years the red cedar will survive the practice of shearing?

Wm. Cutter: For many years.

E. N. Thomas: Will trees planted on the north side of a hedge-row seriously damage the hedge?

Wm. Cutter: The injury does not occur from shade, but from the exhaustion of the ground.

Geo. Y. Johnson: I know of cases where no apparent damage occurs from growing shade trees in the hedge-row. In such instances the hedge-row was fully grown into a fence, and then, at distances in the row, a shoot was allowed to grow up and form into a tree. The common lilac, laurel-leafed willow, and Japan quince will adapt themselves as ornamental hedges. Should be planted about two feet apart in row, and manured. Shoots will spring up between the plants, form into a dense row, which, when neatly shorn, becomes a beautiful ornamental hedge.

H. E. Van Deman: The purple-leafed barberry, which holds its color all summer, and the privet, which is easily grown from cuttings, make fine ornamental hedges.

Mrs. Still: The Japan quince can be propagated from cuttings of its roots.

J. W. **Robson**: Belle Helena and sweet sensitive brier are easily made into hedges. The fragrance of the latter makes it very desirable. The Indian currant is also a good plant.

Geo. Y. Johnson: I wish to add the yucca gloriosa (scientifically), commonly known as Mexican soap plant, or Adam's needle and thread. It can be made ornamental, and is an evergreen plant.

SMALL FRUITS.

STRAWBERRIES.

H. E. Van Deman: The culture of strawberries is not properly understood by the masses—and from this come so many complaints of failure. I hope that the experience of successful growers will be brought out at this meeting.

Judge Holt, Beloit: I planted strawberries in 1875, and obtained a crop in 1876, '77, and '78, but failed this year. Part of the time they were mulched, and not mulched cannot discover any difference in the treatment. I grew in 1878, on a patch of ground not larger than this hall, all the berries desired for use, and sold several bushels; variety planted, the Wilson's Albany.

H. F. Longworth, Beloit: I planted in the spring of 1877, 500 Wilson's Albany, which yielded 90 quarts of fine berries in 1878. The following year, planted 700 more, and picked from these, same season, 10 quarts of very large berries. Had no berries this season.

J. C. Rose, Valley Falls: Chas. Downing is preferred for my section.

H. E. Van Deman: Monarch of the West is succeeding in Allen county.

F. Wellhouse: I am an expert in handling the strawberry. I always fertilize heavily with sugar and cream, and raise an enormous quantity with a spoon.

Secretary: I can testify to the amount of the fertilizing element the Judge refers to, as necessary to his investments in strawberry pursuit—having witnessed on several occasions the applications made by him. He is successful in this pursuit, as in all others he undertakes.

GOOSEBERRIES.

H. E. Van Deman: I have the Houghton and Mountain. Prefer the former. The latter variety is a large berry, but a shy bearer.

Mrs. Still: The Downing is a more regular bearer, with me.

Hon. Welcome Wells: I have the Pale Red and Houghton. The first is a prodigious bearer; the second is the best in quality.

E. N. Thomas: This berry is an extravagant one. It requires three pounds of sugar to one pound of berries to make them even endurable.

G. Y. Johnson: A little soda relieves half of its acid.

RASPBERRIES.

J. W. Robson: Doolittle preferred. The Miami is a fine berry. McCormick has not behaved very well the past winter. Our native varieties are very promising. Turner is doing very well; one quart of these are more valuable to me than a dozen of the "cap" varieties.

WM. CUTTER: Raspberries should be planted in rows eight feet apart, and four feet apart in the row. I prefer the McCormick.

J. W. ROBSON: I would plant as Mr. Cutter advises, and head in the canes in summer to four feet in height. This will cause them to branch. Clip the branches back to about one foot in length. I do not say that a man is a traitor to his country, but to his family, who does not grow fruits for them to eat.

SECRETARY: I had occasion to visit the fruit farm of E. A. Coleman, near Lawrence, the past week, and look over his raspberry plantation, which is the largest by far of any I am acquainted with in Kansas. Such a profusion of fruit it has never been my lot to witness. It was a sight worth traveling for miles to look upon — an effective settler to Kansas *croakers.* I found the Doolittle, Miami, Smith's Iron-Clad, Golden Cap and Turner in a condition of complete success. Well might its proprietor feel proud of the results of his indefatigable labors in that pursuit. The rows were about six feet apart, and stools in the rows about four feet apart. The canes had been pinched off at about three feet in length, the previous year, which caused the development of laterals which had been clipped at one foot in length. This left the cane in the form of a diminutive tree, which was loaded and bending to the ground with fruit, fine and large for the season. The cultivation has been thorough and constant, as the healthy growth of the plants indicates.

BLACKBERRIES — RUST OF LEAF.

J. W. LATIMER: Rust appears in my plantation where the young plants were dug in spring time.

WM. CUTTER: I find a few cases of rust among my blackberry canes; neglect, or lack of culture, I think is the cause. In Illinois it generally occurred in neglected patches.

H. E. VAN DEMAN: This rust is a fungus, and generally appears on weak canes. In my locality, the Lawton is killed to the ground; Kittatinny seriously injured; Snyder has escaped injury — canes rather slender, productive. The berry has a harder center than the Kittatinny.

J. W. ROBSON: Chas. Reese, near Abilene, has a very large seedling or native blackberry ten days earlier than either Kittatinny or Lawton, which is quite promising. Kittatinny blackberry, like the Wilson's Albany strawberry, is picked before fully ripe, and therefore of poor quality. It is very luscious when fully ripened.

MRS. STILL: We must not expect to find any variety of berries that will resist all kinds of weather.

E. N. THOMAS: I can indorse Mr. Robson's praise of the Kittatinny, and believe that with proper protection the canes can be saved from injury.

CURRANTS.

E. A. TAYLOR: I have currants that fruited when two years old. The bushes are thrifty and promising.

H. E. Van Deman: The currant thrives at Manhattan planted on the east side of a stone wall.

President: The finest growth at Manhattan is found at the foot of a steep southeastern hill-side slope. The ground is cool and moist.

Welcome Wells: I am satisfied they can be grown in the shade of orchard trees.

J. W. Robson: Very fine currant bushes can be seen in Franklin county. Were heavily mulched.

Adjourned.

THURSDAY EVENING.

The meeting was called to order at appointed time, with President E. Gale in the chair. Exercises opened with music.

REPORT ON METEOROLOGY.

BY PROF. F. HAWN, LEAVENWORTH.

In consequence of the peculiar climatic conditions of the winter and spring of the current year, and their effects on the fruit crop and fruit trees, it became desirable to have those conditions fully exhibited. These were supplied by Samuel W. Rhode, of the United States Signal Corps, in charge of the station at Leavenworth, who kindly furnished us with a climatic synopsis of the respective months of the past half-year, which appears as an appendix to our report, and to which reference will frequently be made.

From Mr. Rhode's report you will observe that the year thus far has been subjected to more and greater vicissitudes than usual. These have resulted in a failure in most of our fruits, and with it also material damage to the trees and shrubs of the more tender species. The destruction of the fruit was undoubtedly caused by the great thermal ranges in March; but the trees were not subjected to the test of so low a temperature (14½° below zero) where damage hitherto has been considered imminent. Indeed, the damage to peach trees this winter, with only one range in the temperature as low as 14.5° below zero was greater than in the winter of 1873, with a range of 26° below zero. We know of several instances where even a good crop of peaches followed after a range in the temperature much lower than this winter. I shall not attempt a solution of this anomaly from an atmospheric standpoint, but refer to physical conditions that may be involved in the problem.

It is well known that the soil of eastern Kansas, of itself deep, is based on a porous, friable, marly, silicious clay many feet in depth, and rich in mineral plant-food. The roots of trees and plants with strong tap-roots, readily penetrate this marly bed to great depths. In through cuts of streets in this marl in Leavenworth, Kansas City, and several other places in the valley of the Missouri river, we found the roots of oak trees at twenty-five feet below the surface of the ground, and those of the poke-weed nearly as deep. The roots of trees in this condition are never in close sympathy with the tree above the ground, but always ready to respond to the least favorable change above in sending up sap more readily and with greater force than if they lay nearer the surface, and more under the influence of the temperature that surrounds the tree. This undoubtedly produces premature activities in the functions of the tree, or at least abnormal plethora that works no good to its health or fruitfulness.

Now refer to the supplemental report of Mr. Rhode, where you will find extraordinary diurnal ranges in the winter and spring.

In December he tells us the mean temperature was 21° below that of the corresponding month of 1877, and 8° below the December mean, though the lowest range of the thermometer was but 3° below zero.

In January the mean temperature was about 3° below the January range, with a minimum of 14.5° below zero. The greatest daily range was 35.5°.

In February the mean temperature was normal; the highest marking was 69°—a near approximate to summer heat—the lowest range was zero. The greatest range was from 69°, on the 24th, to zero on the 26th; 44° of this fall occurred on the 25th. Now take into consideration what the condition of the tree must have been on the 24th of February, in a temperature of only 6° below summer heat; the roots from their depth below responding vigorously to the demands above, and reluctantly ceasing only when barred by the frozen tree above, bound in icy bands of zero. The wonder is that so many escaped being killed outright.

In March the mean temperature was 6° above the average. The highest temperature was 84°—the highest March temperature on record at the station. On the day which this high temperature occurred there was a fall of 40°, an extreme not healthful to man or tree. On the 27th of March, as we have seen, we had a temperature of 84°, but on the 3d of April we had as low a range as 19.5°, within a fraction the lowest temperature in April for forty-eight years. For further eccentricities of the temperatures, see the appendix.

Keeping in view the relations of the tree between the roots in their depth below, and its body and branches above, we can readily conceive that much of the sap set in motion in the warm days cannot become eliminated by the functions of the tree before it becomes congealed, as the flow does not stop until the tree becomes frozen. With this freezing the sap is converted into viscid fluid, in some cases as bitter as aloes. Such influences must become detrimental to the tree and its prospective fruit crop, and may have been the cause of the failure of the fruit in 1878, and the abortions in seven previous years. These and other influences of a kindred nature undoubtedly contribute to the early decay of our fruit trees—as it is the experience in Platte county, Missouri, where nearly all the conditions are identical with eastern

Kansas, that apple orchards should be renewed every thirty-five years, and a number of standard varieties and other species of fruit much sooner.

In the early pursuits of our professional life, we became familiar with a region in Pennsylvania between the Delaware and Susquehanna rivers, denominated "beech woods," where grew the most magnificent trees of their kind we ever beheld. Sugar maples there were fifty feet, without a branch, often three and a half feet over the stump, and sound from the bark to the heart. These grew on a soil so thin and barren as to be unfit for most of the purposes of husbandry. This thin sheet of soil rested on a hard-pan nearly as dense as metal—so much so, that the roots of the trees could only penetrate it at few isolated intervals, and as it seemed more for anchorage than gathering sustenance for the tree. A netting of roots covered the surface of the ground, and were half exposed above it, so thin was the soil. When the tree was blown over it brought up all this net-work, together with the soil in which it had so partial a support, and the mass formed a perpendicular screen twenty feet in height. Here the roots and the tree above the ground were in close sympathy with the climatic changes; were affected nearly alike, and at the same instant felt its influences. The solidity, health and longevity of those trees were undoubtedly due to the close sympathy of their roots with the remainder of the tree, and their slow growth, as their concentric rings could be distinguished only by the aid of a glass.

If these lessons teach anything, it is, that we should select our thinnest soil and subsoil, and northern exposures, for our orchards.

Mr. Rhode further observes in his report that "the atmospheric conditions during May were almost coincident with those of 1874. There is only a slight difference in the mean barometer, temperature, humidity and rainfall."

The spring of the present year, in many of its details and in the aggregate, also corresponds with the spring of 1874. In March of that year the temperature rose in one instance to 83°, the highest then on record, to be superseded by 84° in the March of this spring. In the spring of 1874 the mean temperature was 52.10°; the mean temperature of the three months of the spring of this year, 56.92°, nearly 5° higher than in 1874. In the spring of 1874 the rainfall was 7.45; this year it was only 6.93, a little over half the normal amount. The sad history of the drouth of 1874, with its fierce heat ranging in the hundred degrees for days in succession, and the short crops, is still fresh in our memories.

In the winter of that year (1874) the accumulation of snow in the mountains was light. Early in the season of that year the irrigating canals and miners' ditches were running low in consequence of the exhaustion of the snow in the mountains.

We received a notification from Salt Lake City, Utah, dated April 6, of the present year, that there was about half the usual amount of snow in the mountains. Upon the receipt of this intelligence we notified the country, through the Leavenworth *Daily Times*, that the rainfall of this season would be short—probably a drouth. The results thus far are before you, and the future may be looked for with some solicitude, particularly July and August.

If the analogy of the spring of 1874 and that of this year should run parallel through the summer, we may anticipate the results approximately by the following: The highest thermal range in June, 1874, was 96°; in July 104°, and in August from 107° to 113°. The average temperature of each of the three months was a fraction over 6° above the mean, and on several days in August the mean of the twenty-four hours was 96°, a temperature not often attained. The rainfall in June was 4.96 inches; in July 3.28 inches, and in August only 1.70, or about half the normal quantity. It was the wantage in this month that finally ruined the crops.

I would however remark, that from late dates at Salt Lake City, Utah, it appears that a very considerable amount of snow fell in the mountains recently. These snows, if as extensive as they appear to have been from reports further south, may materially modify the conditions of the early summer. But these later snows falling under a higher thermal range, they with their correlative effects soon pass away.

Following is the report of Mr. Rhode:

REPORT OF SAMUEL W. RHODE,

Of the U. S. Signal Corps, in charge of the Leavenworth station

DECEMBER.

This month was remarkable for the pleasant weather of the first 11 days, and the continuous low temperature during the remainder of the month.

The oscillations in pressure during the month were frequent, rapid, and several times very great. The mean barometer (30.198) was .103 higher than December, 1877, and .054 higher than the December mean. The highest barometer was 30.740, on the 24th; lowest, 29.606, on the 10th; monthly range, 1.134 inches.

The mean temperature of the month was 23.32°, which was 21° less than December, 1877, and 8° below the December mean.* The highest temperature was 52°, on the 3d; lowest, 3° below zero, on the 18th. Greatest daily range, 27°, on the 28th; least, 3.5°, on the 8th.

The mean percentage of humidity of the month, 73.72, which was slightly above the normal; the greatest daily mean was 89.30, on the 8th; the least, 42, on the 3d.

The total precipitation during the month was 2.16 inches, which was very near the normal. By actual measurement, 13.4 inches of snow fell on the 12th–13th, which was the greatest fall ever recorded at this station.

The prevailing wind of the month was north. Highest velocity, 27 miles, from the north, at 1:30 p. m., on the 23d. Total movement of the wind during the month, 4,811 miles. Of the wind's direction 217 observations were recorded, as follows: N. 81 times, N. W. 43 times, W. 4 times, S. W. 7 times, S. 34 times, S. E. 17 times, E. 8 times, N. E. 20 times, and calm 3 times.

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*[And 6.45° below the mean of thirty-four years at Fort Leavenworth.—F. H.]

Number of clear days during the month, 5; fair, 12; and cloudy, 14. Snow fell on 10 days.

JANUARY.

The most notable features of the weather during January, were the high pressure, and the remarkably low temperature of the first half of the month; the high percentage of humidity, and the light precipitation.

The mean pressure of the month was 30.189, which was .04 above the average. The highest barometer was 30.781, on the 3d, and the lowest, 29.596, on the 22d.

The mean temperature of the month was 23.65°, being about 3° below the January average. The highest temperature recorded during the month was 56°, on the 27th; the lowest, 14.5° below zero, on the 3d. Lower temperature than this has been recorded at this station in January of previous years as follows: In 1873, 26° below zero; in 1875, 20° below zero. The greatest daily range of temperature was 35.5°, on the 20th; and the least 5°, on the 28th.

The mean percentage of humidity during the month was 75.79; about 5 per cent. above the average.

The total rainfall during the month was 1.16 inches, being slightly less than the average. The largest rainfall in January, observed at this station, was 3.14 inches, in 1874; and the least, 0.13 inches, in 1872. The heavy snow which fell on December 13th, 1878, remained on the ground during the greater portion of January, and is said to be the longest period snow has remained on the ground, in this portion of the State, since 1856.

The prevailing wind of the month was south. Total number of miles traveled, 4,228; highest velocity, 21 miles per hour, from the north, at 12:30 p. m., 1st. Of the wind's direction, 217 observations were made, as follows: N. 44 times, N. W. 57 times, W. 1 time, S. W. 6 times, S. 66 times, S. E. 12 times, E. 6 times, N. E. 12 times, and calm 13 times.

Number of clear days, 10; fair days, 9; cloudy days, 12; days on which rain fell, 7.

FEBRUARY.

The meteoric conditions during this month were notably constant, and there were few features to distinguish it from the same month of past years. The most notable facts were the high-pressure areas of the 1st, 13th and 26th; the low temperature on the 26th; the sudden change in temperature on the 25th; the heavy gales of the 12th, 25th and 28th; the low percentage of humidity, and the light rainfall.

The mean barometer of the month was 30.106, about .05 above the average. The highest barometer was 30.573, on the 13th; the lowest, 29.428, on the 24th.

The mean temperature, 32.93°, which is the February average. It was the coldest February since 1875. The highest temperature was 69°, on the 24th; the lowest zero, on the 26th. Greatest daily range, 44°, on the 25th; least daily range, 6.5°, on the 17th.

The mean percentage of humidity was 63.96, about 7 per cent. below the mean. With the exception of 1876, it was the lowest February mean in the past seven years.

The total rainfall during the month was 0.54 inches. The mean for February is 1.02 inches.

The prevailing wind of the month was south. Total number of miles traveled, 5,745. Highest velocity 37 miles, from the N. W., at 2 p. m., 25th. Of the wind's direction, 196 observations were recorded, as follows: N. 47 times, N. W. 46 times, W. 8 times, S. W. 8 times, S. 60 times, S. E. 18 times, E. 1 time, N. E. 4 times, and calm 4 times.

Number of clear days, 6; fair days, 12; cloudy days, 10; and on 6 days rain fell.

MARCH.

The most notable features of the meteoric conditions during the month of March were the generally high pressure, high temperature, low humidity, light rainfall, and no storms.

The mean barometer of the month was 30.053 inches, about .06 above the March mean. During the first three days of the month the pressure was notably high. The highest barometer during the month was 30.606, on the 2d; the lowest, 29.573, on the 8th.

The mean temperature of the month was 46.42°, about 6° above the March average, and with the exception of 1878 (50.90) the highest March mean ever observed at this station. The highest temperature during the month was 84°, on the 27th, which was the highest temperature ever observed at this station in March. The highest March temperature previously observed was 80°, in 1878. The lowest temperature was 9°, on the 14th; greatest diurnal range, 40° on the 23d and 27th; least daily range, on the 16th.

The mean percentage of humidity during the month was 55.52, being 11.54 below the March mean; the lowest observed during the month, 11 per cent., at 2 p. m., on the 23d, which was less than any March since the station was established, in 1871.

The total rainfall during the month was .32 inches, which was 2.79 inches below the March mean.

The prevailing wind of the month was north; highest velocity 36 miles, from the N. W., at 3 p. m., 23d. Total number of miles registered during the month, 6,997. The wind's direction was recorded 217 times, as follows: N. 56 times, N. W. 112 times, W. 2 times, S. W. 10 times, S. 47 times, S. E. 16 times, E. 14 times, N. E. 18 times, and calm 12 times.

Number of clear days during the month, 9; fair days, 14; cloudy, 8; and the number of days on which rain fell, 6.

APRIL.

The weather conditions during April were notably constant, and there were few features to distinguish it from April of past years.

The mean barometer of the month was 29.930—about .05 above the April mean. The highest barometer was 30.404, on the 3d; the lowest, 29.444, on the 9th. The pressure during the month was somewhat higher, and the range somewhat less, than during the same month for several years previous.

The mean temperature of the month was 55.37°, being 3° above the April average. The highest temperature was 83°, on the 26th; the lowest, 19.5°, on the 3d. This was the lowest April temperature recorded at this station during the past seven years. The greatest daily range, was 40°, on the 5th; and the least daily range, 10°, on the 14th and 30th.

The mean percentage of humidity during the month was 55.38 per cent. The April average is 60.80 per cent. The ranges were not very great. The highest daily mean was 85.7 per cent., on the 14th; the least, 28.3 per cent., on the 5th.

The total rainfall during the month was 3.57 inches, being nearly an inch below the April mean. The greatest April rainfall ever recorded at this station was 7.65 inches, in 1876; the least, 1.67 inches, in 1875.

The prevailing wind of the month was southeast. Total number of miles traveled during the month, 6,629 miles. Heaviest velocity, 32 miles, from the southeast, at 3:15 P. M., on the 8th.

The wind's direction was recorded 210 times, as follows: N. 45 times, N. W. 27 times, W. 4 times, S. W. 4 times, S. 31 times, S. E. 46 times, E. 15 times, N. E. 28 times, and calm 10 times.

[Reports on the prospective fruit crops were about as follows: The winter was unusually severe on shrubs, trees and plants; not so much from the low thermal range as from the protracted mean and other atmospheric conditions, such as humidity, etc. March added greatly to the injury, as on the 7th the thermometer marked up to 83°, and for six days the mean was over 55°. This developed the buds to a vulnerable point, and started a flow of sap that proved fatal to many trees and shrubs. Following this, came the low range of March 14th and 19th, with 9° and 15° respectively. This was again succeeded by the high ranges from March 25th to the 29th, inclusive, the thermometer on each day marking over 70°, and on the 27th, up to 84°. This abnormal period was followed by another low range, on April 3d and 4th, the minimum temperature being 19.5° and 21°, respectively—the lowest April range at the Leavenworth station, and within a fraction the lowest range recorded in this vicinity for forty-eight years.—F. H.]

MAY.

The most remarkable points in the meteoric conditions during May were the high temperature, low humidity, light rainfall, and severe storms on the 13th and 29th.

The atmospheric conditions during May were almost coincident with those of May, 1874. There is only a slight difference in the mean barometer, temperature, humidity, and total rainfall of the two months.* In May, 1874, the highest and lowest temperatures were 94° and 41°, respectively. The year 1874 was the hottest in the records of the station. The maximum temperature of July, 104°, and August, 107°. The mean pressure of the month was 29.864, which was normal. In May, 1874, 29.865. The greatest daily oscillations were on the 2d, 3d, 4th and 29th. The highest barometer was 30.256, on the 6th; the lowest, 29.390, on the 3d.

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* [It will be recollected that in the winter and spring of that year (1874) the snowfall in the Rocky mountains was also light.—F. H.]

The mean temperature of the month was 68.96°. This is the highest May mean in the records of the station, which are complete from 1872, to date. Mean temperature of the month of May, 1874, 67.30°; the lowest 41°, on the 6th. The greatest daily range, 31°, on the 17th; least daily range, 6.5°, on the 14th. The highest daily mean was 82.5°, on the 25th; the lowest daily mean was 55°, on the 5th.

The monthly mean percentage of humidity was 58.64; (in 1874 it was 60 per cent.;) this was 6 per cent. below the May average. The highest daily mean was 87.7, on the 14th; the lowest, 36.7, on the 4th.

The total rainfall during the month was 3.04 inches; of this, 1.18 inches fell on the 13th, and 1.43 inches on the 29th. The dryest May since 1874. The May average is 5.59 inches.

As there have been many persons inquiring how the temperature and rainfall of the past spring compare with the same period of previous years, the following table showing the mean temperature and total rainfall at this station, for the spring months (March, April and May), for the period of seven years, has been compiled for the information of those interested:

Years.	*Mean temperature.*	*Rainfall, inches.*	*Years.*	*Mean temperature.*	*Rainfall, inches.*
1872	52.99°	13.49	1876	51.97°	20.21
1873	51.23	12.20	1877	51.83	20.20
1874	52.10	7.45	1878	57.33	10.49
1875	51.07	7.70	1879	56.92	6.93

The following table, showing the average temperature and average rainfall over the lower Missouri valley during the spring months (March, April and May) of the past five years, and the average of many years previous, will prove of interest to those desiring to compile some data as to the effect produced on the growing grains, by the weather of the past three months—rainfall in inches and hundredths:

YEARS.	MARCH.		APRIL.		MAY.	
	Temperature.	*Rainfall.*	*Temperature.*	*Rainfall.*	*Temperature.*	*Rainfall.*
1874	36.5°	2.50	46.4°	2.80	66.3°	2.20
1875	30.6	1.84	46.5	3.33	63.3	3.30
1876	31.8	4.50	51.8	4.00	64.4	3.75
1877	36.3	3.00	52.6	5.40	61.6	6.90
1878	51.1	7.40	58.5	4.42	61.4	5.23
1879	42.5	1.47	51.9	2.67	69.0*	3.00*
Averages of many years	36.5°	2.25	50.7°	3.20	64.8°	4.10

*Approximates.

The prevailing wind of the month was south; highest velocity, 60 miles per hour, from the north, at 7:07 P. M., 29th. Total number of miles recorded during the month was 6,858. The direction of the wind was recorded 217 times during the month, as follows: N. 32 times, N. W. 9 times, W. 4 times, S. W. 8 times, S. 86 times, S. E. 48 times, E. 15 times, N. E. 10 times, and calm 5 times.

Number of clear days during the month, 7; fair days, 14; cloudy days, 10; and on which rain fell, 15.

SAMUEL W. RHODE,
Sergeant Signal Corps, U. S. A.

[A very interesting sequel to the foregoing report was omitted, for the want of room.—F. H.]

ADDRESS OF WELCOME.

BY MAYOR VREELAND.

Mr. President, Ladies and Gentlemen: We cordially welcome you among us; and we congratulate you that you again meet to give countenance and support to a pursuit which at the present day interests and is the delight of the whole civilized world. Yes, wherever a ray of civilization sheds its luster on this earth, one of the beams of that ray is horticulture. It forms the charm of the leisure hours of the highest, the wisest, and the best. It is the healthy employment of the humble and the industrious. Absorbed in the cultivation of his favorite flower, his patch of vegetables, or his orchard of fruits, the poor man envies not the wealthy, nor is his sane and well-braced mind disturbed by the diseased and empty dreams of the ambitious. How happy for millions, had a knowledge of horticulture with its refinements, in former times been more universally disseminated and encouraged among mankind. How different might have been the history of South America, from its discovery to this day, had Pizarro and the ministers of religion who accompanied him associated the cross which they bore with the spade, the rake, and the pruning-knife, rather than that of the lance, the sword and the gun. How different would have been the existence and fate of the many nations who passed lives of misery, and were finally exterminated. How different would be at this day the face of the immeasurable plains, the far-stretched forests in such a heavenly climate. Her history would have been one of peace and prosperity, instead of one of blood and desolation. Her plains would have been covered and adorned with swarms of happy and industrious people, by whom the names of these discoverers and civilizers would have been venerated and held sacred.

Horticulture may be emphatically named as one of the arts which exhibit most preëminently the peace and prosperity of a nation, and should certainly be upheld and encouraged by all to whom these happy results of human reason and divine religion are held dear. Horticulture is probably in its infancy in this country, but if it is, it is the infancy of a giant. How few have given it the attention they should. And yet we have an almost numberless variety of flowers and plants; and of fruits we may boast of the strawberry, the peach, the plum, the pear, and the apple. Indeed, we have much to encourage us in this great work. It requires but little labor to produce great results. Nature has been lavish in her gifts to this climate. The glorious beauties of our sunsets amply testify to the purity of our atmosphere, and the almost tropical sun during the summer months perfectly matures the juices, the pollen, and the seed of our plants. For the grateful shades of other lands, the ingenuity of the horticulturist here can easily find a substitute, but no other country can imitate our glorious sunsets. The very essence of this pursuit is to overcome difficulties, to make the wintry desert to blossom like the rose. If circumstances were all favorable, if everything flourished spontaneously, of what value would be your meeting to-day?

Again extending to you all a cordial welcome, with the hope that this meeting may be both pleasant and profitable, and one to which in the future we may all refer with pleasant recollections, I thank you.

An appropriate response was made by H. E. Van Deman.

The following essay was then read:

A FEW WORDS ON FORESTRY.

BY GEO. Y. JOHNSON, LAWRENCE.

"The groves were God's first temples, and ere man learned
To hew the shaft, and lay the architrave,
And spread the roof above them, ere he framed
The lofty vault together, and rolled back
The sound of anthems in the darkling wood,
Amidst the cool and silence he knelt down,
And offered to the Highest solemn thanks
And supplications, for his simple heart
Might not resist the sacred influences,
That from the stilly twilight of the place,
And from the gray old trunks, that high in Heaven
Mingled their massy boughs, and from the sound
Of the invisible breath, that swayed at once
All their green tops, stole over him, and bowed
His spirit with the thought of
Boundless power and inaccessible majesty."

'Tis thus that one of the grandest of Nature's children discourses of the *groves*, and in the fullness of his heart renders a tribute of praise to the great Father of all for his goodness and the grandeur of his works. The world is benefited by having once contained so sweet an interpreter of Nature's treasures. If men do pause and wonder at the meteor-like ascension to place and power of a Cromwell or a Bonaparte, who passes quickly along the stage of life, and retires to the ante-room called *death*, why should they not pause before the majesty of a stately tree, which has for *centuries* withstood the very elements, and still holds its lordly head erect, crowned with its coronal of green leaves?

From time out of mind and date, men have been forest-destroyers. God created the forests, man destroys them, and in consequence reaps the curse.

In one of "God's first temples" man first dwelt, and, happy in horticultural pursuits, devoted himself to dressing the garden and caring for the *trees*. But when in an evil hour, he stretched forth his hand *against* that temple to destroy it, injured Nature, by such climatic changes as this very destruction causes, "made it *too hot for him*," and the burning heat of the sun destroyed every green thing; and thus man, with his own hand, erected that flaming sword that turned every way, forever separating him from his Eden, and compelling him to either perish of starvation or to seek new and fertile fields, there again to repeat the same sad experiment. And from that day to this, man has gone on destroying and leaving sterility and famine in his deserted track. The rains ceased, or at least came at unseasonable intervals; so production of cereals became uncertain, or perhaps entire failures—and he must follow up the forests, in order to secure the rainfall necessary to the growing of food to support himself and flocks. And thus, man has been continually lingering in the outer courts of God's temple. The stories of the aborigines of America indicate that their forefathers came down from the northwest and followed the forests, built their cities, deserted, and built anew farther down, as pursued by the "flame of fire" created by their forest destruction.

Man has ever moved toward the forests, and recent discoveries have found the locations of Meroë, Thebes and Memphis all were, at different dates, the capital of ancient Egypt, and without doubt were located in the midst of rich agricultural districts, as their existence would have been impossible in any other kind of location—thus showing that the capital of that nation has been *thrice removed* because of the sterility caused by the destruction of those things provided by Nature to equalize the moisture for the benefit of Nature herself, and for her children.

Historians leave it recorded that the valley of the *Nile* was once a dense forest, and to-day along *its* borders, as well as along dry channels of what were once large rivers now traceable far into the Great Desert, are found petrified trees and stumps. Man must have commenced in the upper valleys of these rivers and closely followed the receding forest, which was before him the perfect picture of beauty, and left behind him, closely following upon his heels, an arid waste and burning desert.

When Moses sent out the twelve scouts to reconnoiter Palestine, they came back in due time and reported the land covered with groves and flowing with milk and honey. In blind bigotry and fanaticism the Jews cut down the groves because men worshipped idols therein; and this destruction went on to such an extent that almost the entire country became sterile—a barren place "where no water is;" and its then majestic Jordan has dwindled into a contemptible brook, into which a school-boy would scarce cast a "pin-hook." And the once beautiful oleander-wreathed shore sea of Galilee has almost degenerated to a pool, and their green and pleasant mountains, Horeb and Nebo, are barren piles of rock and sand.

The large areas of country in western Asia, from which to-day comes to us the heart-rending news that thousands and thousands of human beings are *starving*, were for ages noted far and wide for their fertility; but the whole country has been denuded of trees, and to-day the descendants of short-sighted sires are reaping the curse.

To satisfy themselves upon the climatic influences of forests, scientific men have for eighty years kept accurate measurements of the river Elbe, in Germany. The width of channel remaining the same, the depth has decreased nine inches, and the annual flow has decreased 18 per cent., and that decrease has been steady and regular from first to last. Now for the cause. All this time the forest-destroyers have been cutting the trees from the land along its banks and from the mountains in which the river has its source.

In our own country, though no measurements have been kept, yet the flow of water has been decreasing, as is proven. Even upon the grand old Mississippi, boats that used to run at all seasons of the year to St. Louis can now only ascend as far as Memphis; and all this has occurred within the memory of steamboatmen now living. The great destruction of forests along its banks and at the sources of its tributaries accounts for this. Many of these tributaries fifty years ago offered a sufficient volume of water to support water-power along their margin the year round, which to-day for most of the year are naught but dry runs. And the mills, to whose busy wheels the merry miller kept time with his whistling, have gone to decay and are numbered with the things that were.

From the destruction of their forests in Ohio, the climatic changes have been such that streams which fifty years ago would float a vessel of fifty tons burden, would to-day, over the same route in ordinary stage of water, scarce float a canoe.

But time would fail me to enumerate the instances of sterility or damage following the denuding of large areas of forests such as St. Helena, certain portions of Australia, the Chocolate Plains in the rear of Caraccas, and numerous others.

It is an old saying that the "hair of the hound cures the wound," and to prove that forest-growing will restore the original condition, we have but to give a few instances.

The waters of Lake Forraqua, in Venezuela, had receded with the diminution of the forests around it, until several feet less in depth. When the country was devastated and its inhabitants driven out by war, Nature commenced the restoration, and in twenty years a heavy forest growth covered the once desolated fields and the water had gradually increased in depth to its former condition.

Since the Mormons settled Utah and planted the land extensively with trees, the waters of Salt Lake have constantly risen, until to-day it stands over seven feet deeper than when they first settled there, and their river Jordan has increased greatly in its flow.

Napoleon occupied Egypt sixteen months and not a drop of water fell.

Sixty years ago Mehemet Ali planted fifty million trees, and now the annual average number of rainy days has increased regularly to forty-six.

Since the planting of trees in our own State the annual rainfall has been gradually increasing, keeping even pace, and that rainfall has been more evenly distributed through the growing season, thus promoting the productiveness and making our State more habitable.

Why these things are so, I leave to professors of science to instruct you; be mine the humbler task to record the facts and call your attention to them.

These facts clearly point out our duty, and indicate what is necessary for us to do to make our beautiful young State the best in the Union. This problem should be carefully taken hold of and studied well, and it would be wise to secure the services of competent men to make surveys and carefully calculate from cause to effect, and instruct our people how and where to plant, so as not to defeat the object or aggravate the existing circumstances; so that the planting of groves and belts might be made in such manner as to take advantage of prevailing winds, and, while avoiding "sucks" and "draws," so prone to create tornadoes, the effects of which are so visible in this portion of the State to-day, that they might direct the air-currents in such manner as to benefit all and harm none. It is a deep problem to study, and when I see half-fledged scientists stretching forth their bold hands and raising their voices to tell the how and why, I can only murmur within myself, "Fools boldly walk where angels dare not tread."

I know of a locality in Edgar county, Illinois, fourteen miles northwest of Paris, that is frequently visited by storms of such violence as to unroof houses and barns, tear down and even pick up and carry houses for a distance. Northwest of this is a gap in the "Big Ridge" caused by Bruellett's creek passing through. Through this gap the wind pours with its terrible force, carrying everything before it.

Not far from Emporia, in this State, is a locality similarly situated, and I have no doubt but those of you who watch the occurring events have noticed accounts of several destructive storms in that locality.

It occurs to me that such instances prove the necessity of intelligent instruction and careful surveys, that we might be enabled to so plant as to avoid making "draws" and "sucks," and to correct those naturally existing, regulate the rainfall by such influences as might prevent these spasmodic storms, and distribute the moisture more evenly throughout the season. This, some of the instances given clearly indicate can be done.

But the American people, with their present utilitarian ideas, ask of the *profits* of tree-planting, aside from climatic influences, as that is a thing not at present understood; and this brings us face to face with the simple but pertinent question about planting of forest trees, *Will it pay?* Now, as the almighty dollar is worshipped, groves or no groves, let us look at the question in the light of a money-making scheme.

To settle this question I will give a few instances. But allow me to say, the only careful records that have been kept of trees planted for forest, of which I have been able to avail myself, are varieties I should not recommend for planting here, extensively. But they will give a pretty clear idea of what can be done with trees that *will* do well here, by what has been done with those, in places favorable to *their* growth. Always remember this, that after a few years, land planted to forest can be used for pasture, thereby giving you the use of the land all along, except the first few years. Dr. Warder, of Ohio, planted one acre to black locust, and twenty-five years after sold the timber standing for $1,000. Put the value of the land at $50, money at 10 per cent., simple interest, add taxes, culture, and you have a clear profit of $700 for the use of the land for twenty-five years, over and above taxes and interest, or $28 per year for one acre. What grain crop will average that?

Another gentleman — name and locality I do not now remember — planted 10 acres to Norway spruce, cultivated three years, and then let it take care of itself, and sold what was left at the end of thirty-six years for $16,000, or $1,600 to the acre, just as it stood; or, taking out interest and taxes, an annual profit of over $30 per acre.

The European larch, planted by the Duke of Athol, in Scotland, commencing when the trees were twelve years old to thin out and sell, and clearing off all that were left at the end of forty years, would have yielded him $4,500 per acre, or an annual average income of $112.50 per acre, not reckoning interest and taxes.

One oak tree was cut, a few miles from Galesburg, Ill., and the body sold for $38; the remainder was cut and sold for $48, making the whole tree bring $86. You can make your own calculations how many can stand upon an acre, and the profits of an acre of such trees.

The Osage orange is destined to be one of our most valuable trees for the Western States — valuable for posts, for railroad ties, for wagon timber, and for all the purposes for which lignum vitæ is now used. It will grow 70 feet high and 3½ feet in diameter, with a body free from limbs for 40 feet. When we consider that the annual demand in the United States for railroad ties would denude 150,000 acres of forest, and that the Osage orange is one of our most valuable timbers for that purpose, that it can be grown 4x4 feet, making over 2,700 to the acre — allowing a third for accidents — (who ever heard of an accident occurring to an Osage orange tree?) and that it takes about fifteen years to grow it to a size for a tie, we can at once perceive that there is profit in its cultivation.

An oak tree was cut within a mile of my farm a few years ago, which made over 5,000 feet of square lumber, saying nothing of the slabs, wood, and feather-edged boards, made in squaring the logs. This was sold for wagon lumber at $30 per 1,000 feet, making $150 for a single tree. These trees could have stood twenty to the acre, and leave room for new growth beneath their branches.

Now one word as to the forest destruction going on in the United States to-day. It is estimated that in Wisconsin and Michigan there are annually cut into lumber one hundred millions of trees, covering three hundred and thirty thousand acres of land; while all the Northwestern States together only plant fifty millions, annually covering less than one hundred thousand acres—not one-third as much acreage as is destroyed; and when we add Minnesota, we reduce the proportion to less than one-tenth.

It is a well-known law of trade, that prices are regulated, when let alone by "corners and pools," by supply and demand. What more conclusive evidence could we ask, that timber-planting promises large rewards for the future in dollars and cents, saying nothing of the climatic benefit? You lose no yield in crops, if you plant one-fifth your land to forest, as it has been clearly proven that the remaining four-fifths will produce more than the whole of it would without the forest.

The extent of this subject should be kept before our people. There are in this country over five thousand artisans in wood, producing an annual manufacture of over five hundred millions of dollars. The locomotives consume wood costing sixty millions of dollars. The annual consumption of lumber in the United States is seven billion feet, worth $140,000,000; as fuel for manufactories, value $100,000,000; as fuel for family use, value $100,000,000; giving a total of $400,000,000, or an average of $10 per capita per annum. And when the annual growth, including new plantations, only reaches a fractional part of the amount destroyed, it plainly shows that something must be done, and that quickly. This becomes to us a question of much greater importance than whether a "chip with a spit on the back of it will pass for 100 cents in gold," as, if not the immediate weal of the nation, its very future existence depends upon its forests to keep up its supply of fuel and lumber, and make and keep our climatic influences such as to give seed to the sower and bread to the eater, or sooner than we are aware the prophecies may be fulfilled, and we may indeed hasten the time when the day shall burn as an oven, the elements melt with fervent heat, the heavens be as brass, and the earth on fire. The fever-dream may become a reality. No wonder that the priesthood of the ancients took advantage of men's superstitions and taught that even each tree was protected by a separate nymph, and that any injury done the tree would be avenged by the nymph, as only the strong terrors caused by superstitious dread of evils to come would restrain men's hands from the destruction of the forests.

We need to educate our people to-day upon the importance of forestry, or we are, in a few years, doomed to perish in our own apparent prosperity. The fate of Eastern countries stands before us, and warns us to keep off the sands in which they sank. Meroë, Thebes, Memphis, and all that was once upper Egypt; large tracts of Persia, Beloochistan, and some portions of Australia, from which man has been or is being driven out by the "flaming sword" of drouth and consequent famine; the condition of the remaining portion of Persia to-day, with its thousands of starving people paying the penalty for destroying their forests; the decrease of water in the streams of New England, Ohio, Indiana, Illinois, and of even the failing waters of the Mississippi—all these bid us to heed the warning and escape the doom.

I can conceive of no greater field for the exercise of philanthropy than is open to-day, and I know of no class whose greater duty it is to "cry aloud and spare not" than those engaged in the pursuit of horticulture. Theirs the mission to "enter into the east gate" and make the entire circuit of this great nation, telling of these things, until the cry shall be taken up and echoed from hill to hill, as the trumpet warning of old, or passed from hand to hand like the "bloody cross" of the Highlands of Scotland, until our people will heed the warning and escape the doom.

The people of Kansas pay five millions of dollars annually to railroads and steamboats for bringing their lumber from the pineries and other forests. Who would not like to cut off this expense? How many mortgages, think you, would this lift from your Kansas farms? How much better would be the times, think you, in this State, were this amount kept here for circulation? How many conveniences to make life enjoyable about our Kansas homes would this amount provide? The remedy is within our reach. We have but to follow and assist nature; plant the seed, care for the plants, and day and night, whether we sleep or wake, the material is being formed at our own doors—free from freight tariff.

The time has come that this tree-growing for climatic influence and for the further supply of timber and fuel, is one of national importance, and every horticultural society and every agriculturist in the land should arise in their might, and demand that the work be reduced to practical form—by the necessary appropriations to maintain and carry out, to the *full*, well-digested, intelligent plans; by the appointment of a National Forester; the establishment of a Department or Bureau of Forestry, with State and local assistants, whose duty it should be to gather statistics; disseminate information; urge upon our people the importance of the subject; instruct where, how and what to plant; make the study as to prevailing winds, and see that the planting is done so as to assist favorable climatic influences, and yet to break the force or to a great extent prevent local tornadoes.

I believe the time will come when these things will be fully understood, and we need to understand more of them to-day. The subject should never rest until each quarter-section has at least one-fifth its area in forest. We have in Kansas to-day an average, I believe, if our statistics are correct, of about four acres of timber land (this includes every acre of growing brush) to each quarter-section, or about one-eighth as much as we should have to properly regulate the climatic changes—to produce the best results for mankind. And this is all located in bodies along the water-courses. Congress had forty acres set as the amount of forest to be planted under the "timber-culture act," and by an unwise change reduced it to ten acres. There should be a general law exempting from taxation all timbered lands, so long as they are carefully kept and cared for—and paying a bounty for timber-planting. These things might be considered to-day to be expensive to the tax-payers, but in a few years it would be fully demonstrated to be an unmixed blessing.

Our county commissioners should offer an annual premium for the best, most vigorous, and carefully kept "planted forest;" and our local fair associations could do good, and themselves credit, by doing the same thing. With the facts and figures before us, and the ever-increasing demand for wood, there is no danger of overdoing the work. The comfort to man and beast, in furnishing shade from the burning rays of the sun in summer and protection from the cold blasts of winter, is another great item in the profit, as every stock feeder well knows.

But there is a higher and nobler thought than the mere dollars and cents made out of it, in contemplation of this subject. There is nothing beneath the heavens—except the culture of flowers—that so ennobles the mind and refines the character as the culture and care of trees. Just contemplate for a moment a home surrounded by choice trees, the sweet perfume of their bloom wafted upon every breeze, their swaying branches answering to every wind, with their stately heads crowned with a green coronal, bowing continually to the presence of the Great Author of all. Compare such a home with the four bare walls, unpainted, of exposed houses, everywhere seen upon our Western prairies, with a chicken-coop in front of the door, and the pig-stye generating perfumes for the kitchen door, and your feelings, I imagine, would take about as great a tumble as they would were you contemplating, for the first time, the grandeur of the Yosemite, or the magnificence of Niagara, drinking in the immensity of the scene, not realizing whether you were standing upon water, air, or terra firma; your heart full, and your brain "all a-whirl" with the thoughts of Nature's magnificence—were some one to take hold of your elbow and offer you a roll of "Bologna sausage."

Did you ever think, too, of tracing national character by the national preference for a particular variety of tree? The strong, sturdy oak is the special pride of our Northern States—the cypress of the Southern. The sharp, prickly-burred chestnut is the pride of Spain. The rugged larch, in its bold picturesqueness, is the glory of the hardy inhabitants of the mountains of Tyrol; while the Lombardy poplar, with more of show than utility, is the adored of France. And what Israelite's heart does not grow warm within him at the mention of the cedar of Lebanon, whose praises were sung by the royal Psalmist, wishing his nation to be as enduring as the wood of his favorite tree? The inhabitants of the Scandinavian peninsula think there is no such tree as the Norway or Scotch pine; while those who live upon our own Pacific slope, who can think of no business transactions less than a line of ocean steamers or a million-dollar gold mine, can take no pride in anything short of the giant red-wood.

Thus study the peculiar characteristics of the tree, and you may, with a great degree of correctness, divine the habits of the nation. Just so of individual character. That man is nobler, better, who plants a tree and cares for it, and trains it so that in after-years he may sit beneath its shade and meditate upon the blessings of God to man—not least of which is the assurance that he may sit in peace beneath the vine and tree of his own planting.

Trees are the fig-leaves with which Nature attempts to hide her nakedness, and go to help make up all the beautiful in Nature. In their contemplation man is drawn into closer communion with Nature's God, and nearer and nearer to all that is grand and good. Bryant has truly said:

> "To him who in the love of Nature holds communion with her visible forms, she speaks a various language. For his gayer hours she has a voice of gladness and a smile and eloquence of beauty, and she glides into his dark musings with a mild and gentle sympathy, that steals away their sharpness ere he is aware."

Let us appropriate to our individual use some of the gentle influences of this same Nature, and make our homes happy and the world better by planting more trees than we consume. Let us not be idle recipients of Nature's beauty, but rather leave the world better and more joyous, and better suited for giving true pleasure to man, than it was when we came into it. I cannot see how we can do this if we go through life destroying those things that go to make up the enjoyments of our existence. Rather is it our duty to make it better by multiplying those blessings: then can we indeed depart in peace.

To all of us in the direction I have indicated comes the command—

> "So live, that when thy summons comes to join
> The innumerable caravan that moves
> To the pale realms of shade, where each shall take
> His chamber in the silent halls of death,
> Then go not like the quarry slave, at night,
> Scourged to his dungeon; but, sustained and soothed
> By an unfaltering trust, approach thy grave
> Like one who wraps the drapery of his couch
> About him, and lies down to pleasant dreams."

FINAL RESOLUTIONS.

Resolved, That the thanks of the members of this Society are due and hereby extended to the citizens of Beloit and vicinity, for their hospitality during the sessions of this our Ninth Semi-Annual Meeting.

Resolved, That our thanks are due to E. A. Taylor, Secretary of the Northwestern Horticultural Society, and his associates as committee of arrangements, for their constant courtesy and attention to the members of this Society, and their untiring efforts to make the sessions interesting and profitable.

Resolved, That thanks are hereby expressed to the Glee Club for the fine music furnished during the last session of the meeting.

Resolved, That our thanks are especially due to the various railways, viz., Kansas Pacific, U. P. C. B., M. K. & T., A. T. & S. F., K. C. Ft. S. & G., and L. L. & G., for their liberal reduction in fare, and courtesy extended to our members.

G. Y. JOHNSON, *Chairman*.

On motion, the Ninth Semi-Annual Meeting closed its sessions, *sine die*.

PROCEEDINGS

OF THE

THIRTEENTH ANNUAL MEETING,

HELD AT HOLTON, KANSAS,

ON DECEMBER 16TH, 17TH, AND 18TH, 1879.

On call of the President, the Society assembled at the city of Holton, Jackson county, Tuesday, December 16th, 1879, and opened its Thirteenth Annual Session at 10:00 A. M., in the hall of the court house, President Gale in the chair.

Rev. J. Denison, of Holton, led the exercises with prayer.

The following committees were announced by the President:

Committee of Arrangements—Dr. V. V. Adamson, Holton; Dr. J. C. Chase, Holton; Geo. Y. Johnson, Lawrence.

Committee on Review of Membership—Prof. E. Gale, Dr. Jos. Denison, Sam. Reynolds.

Committee on Membership—Dr. V. V. Adamson, Jacob Hixon, J. W. Williams.

Committee on Credentials—Dr. J. Stayman, E. A. Coleman, A. N. Godfrey.

Committee on Resolutions—G. Y. Johnson, J. W. Robson, Abner Allen.

Auditing Committee—G. Y. Johnson, H. E. Van Deman, N. P. Deming.

Committee on Final Resolutions—F. Wellhouse, J. W. Robson, E. A. Coleman.

The Committee of Arrangements reported the following order for sessions: Opening of sessions—at 9 o'clock A. M., 1:30 o'clock P. M., 7:30 o'clock P. M. Closing of sessions—at 12 o'clock M., 5 o'clock P. M., 10 o'clock P. M.

IN MEMORIAM OF PROF. B. F. MUDGE, DECEASED.

BY COMMITTEE ON REVIEW OF MEMBERSHIP.

It is our sad duty to chronicle the death of Prof. B. F. Mudge, which occurred very suddenly on the 21st day of November last.

As a member of our Society, and an earnest friend of horticulture, we feel that the occasion calls for some fitting notice on our part. While his own life was devoted to the interest of pure science, we know from his frequent attendance upon our meetings, and his well-remembered addresses, that he was thoroughly in sympathy with not only horticulture, but everything that could promote the development of his adopted State. And it is not with an ordinary feeling of sorrow that we record the departure of one bound by so many ties to the interests of Kansas. We feel as we review his life-long work in behalf of science, and remember how he has been identified with the cause of education for many years, that few men will gather a larger or more varied circle of genuine mourners.

Prof. Mudge was a little more than sixty-two years old. For eighteen years he was engaged in the practice of law in Lynn, Mass. During this time, however, he was almost constantly identified with the educational interests of the city and of the State. He thus indicated where his real life-work lay, giving evidence that he could be happy only as he found work somewhere in connection with the education of our youth. The large geological cabinet which he brought from the East and donated to the State Agricultural College attests that even in his earlier manhood he was pervaded by the same enthusiastic love of science that characterized his later years up to the very last day of his life. His connection with those engaged in kindred pursuits has been intimate and pleasant. His name is by them associated with several new species or forms which he has given to science.

As a teacher among teachers he has long been honored and loved. A very large number of pupils will count Prof. Mudge as one of their best friends. As a citizen and neighbor he was ever ready to speak out in behalf of the right; and with a rare unselfishness did he minister to the wants of those around him. If the community has lost so much in the death of Prof. Mudge, how can we express the loss of that little home circle where in their loneliness they gather to be reminded by everything of the departed?

As one of the founders of the Academy of Science, and its president at the time of his death; as one of the faculty of the State Agricultural College for many years; as one of the most faithful friends of the State Teachers' Association; as one of the most enthusiastic collectors in the interests of geology, both for the Kansas State Agricultural College and for Yale College; and as a friend and sympathizer with the efforts of our own Society, the memory of Prof. B. F. Mudge will be long and faithfully cherished.

Dr. Denison indorsed the sentiments of the report with appropriate remarks.

METEOROLOGY.

REPORT OF STANDING COMMITTEE — PROF. F. HAWN, LEAVENWORTH.

The last half of the meteorological year was as peculiar as the first. The excessive and abnormal rains in June were followed by a drouth and lack of rain extending from the 9th of July through August, in which month less than one-fourth of an inch of water fell, and ending on the 10th of September, with an aggregate precipitation of less than four and three-quarters inches in sixty-four days. During this drouth the signal storm maps do not show a single storm line located through Kansas. Then again, the heavy rains in the autumn months produced an excess of 8.01 inches above the average.

Mr. Rhode, signal officer in charge of the Leavenworth station, in his report, observes that "the total rainfall during the month (June) was 9.90 inches. With the exception of June, 1877, (the total of that month was 10 inches,) this was the heaviest June fall in eleven years past; the June average is 5.38 inches."

In the three days including the 9th, 10th and 11th, 3.26 inches fell. A still greater fall occurred on the 27th, which was 3.43 inches. On these two periods, including four days, there fell a fraction over two-thirds of the amount of the precipitation of the month.

There was another peculiarity connected with these June rains. By examining the rain map of the United States Signal Service for June, you will find that those copious rains were confined mostly to northeastern Kansas and northwestern Missouri, between the 93d and 97th meridians, while excessive drouths prevailed elsewhere. In the South Atlantic States, in the Gulf States, and in Tennessee, the rains were fifty per cent. below the average, and in some localities of these, destructive drouths prevailed, notably in Texas.

A lack of the normal rains, too, seems to have been general elsewhere, except in the lower and upper Missouri valleys, where there was an excess of 1.30 and 0.47 inches respectively. This excess probably resulted from the late snows in the Rocky Mountains toward the northwest, where a snow storm occurred as late as the 4th of July.

Then again, when our drouth prevailed in August, the South Atlantic States, the Gulf States, and Tennessee had fifty per cent. more rain than their average, with great floods in several places, notably in Texas; while the lower and upper Missouri valleys showed a deficiency of over fifty per cent., exactly the reverse of their humid conditions of June. It would seem that if our rains are precipitated from the moisture from the Gulf of Mexico, there would have been a greater sympathy or similarity in the weather of the Gulf States and here, than was shown during last summer.

The temperature of the summer, and other atmospheric conditions except those previously stated, were normal.

In autumn, the atmospheric conditions were again reversed. The protracted drouth of the latter part of the summer was succeeded by copious rains in autumn, with a total fall of double the average. The mean temperature was four degrees above the average of thirty years. These produced a stimulated condition in vegetation. The low temperature and dearth of rain in the early autumn, predisposed the forests to put on their autumnal garb, and its foliage had assumed quite gay colors. But when the rains commenced, and with them an abnormal high temperature, that portion of the leaves of the trees which had not thoroughly relaxed their functions, reassumed their verdant garb, and it was nearly three weeks before they finally perfected their funeral emblem — thus giving us two autumns in appearance.

On the 10th of October violets commenced blooming for the second time, and continued on until the 16th of November — not isolated plants, but with the profusion of spring. A few strawberry flowers made their appearance during this time, but not in sufficient proportions to indicate serious damage to the coming crops. Chrysanthemums continued to bloom in open ground with a northern protection, until the 20th of November. On the 16th of November I observed roses in bud on an open lawn, ready to bloom. I have heard of several instances in Kansas and Missouri where a second crop of pears and apples had been well formed.

The atmosphere on many of the November nights was so transparent that the planet Venus cast a shadow — notably on the morning of the 20th, when the morning star (Venus), when about 30° above the horizon, cast a shadow through a window on the floor of my bed-room. To be certain this time that it was no illusion, I got up and tested the fact in various ways to my satisfaction. This is a phenomenon not often if ever found outside of Kansas and Italy.

For meteorological details of my report, I would again refer you to the able monthly reports of Samuel W. Rhode, United States signal officer in charge of the Leavenworth station, which are as follows:

SIGNAL OFFICE, LEAVENWORTH, KAS., June 30, 1879.

JUNE.

The month was noticeable for the high mean temperature, severe local and frequent thunder-storms, and heavy rainfall.

The mean barometer of the month was 29.871, which was slightly above the June mean. It was the highest June mean since 1871, which was 29.910. The daily ranges were very slight. The highest reading of the month was 30.288, on the 2d; the lowest, 29.456, on the 14th.

The mean temperature of the month was 73.35 — just one degree below the normal. The highest temperature of the month was 93°, on the 9th; the lowest, 46°, on the 2d. The mean and maximum were each about 2° above the mean and maximum of June, 1878. The greatest daily range was 32°, on the 3d; least daily range was 4.5°, on the 25th.

The mean percentage of humidity was 66.28. The average is 65.95. The greatest daily mean was 84.30, on the 22d and 27th; the least daily mean, 39.30, on the 4th.

The total rainfall during the month was 9.90 inches; with the exception of June, 1877, (the total of that month was 10.00 inches,) this was the heaviest June rainfall in eleven years past. The amount that fell on the 27th was 3.43 inches, which was unprecedented in the records of this station. The June average is 5.38 inches.

The prevailing wind of the month was south. Total number of miles traveled, 5,752. Highest velocity, 48 miles from the south, at 7 P. M., on the 9th. The direction of the wind was recorded 210 times, as follows: N. 29 times, N. W. 19 times, W. 7 times, S. W. 5 times, S. 63 times, S. E. 60 times, E. 18 times, N. E. 4 times, and calm 5 times.

Number of clear days, 3; fair days, 18; cloudy, 8; and days on which rain fell, 13. There were 10 thunder-storms during the month. A well-defined solar halo was observed on the 30th, at 11 A. M.

The following extracts are given as of probable interest at present, and are found in the Appendix to the Report of Professor G. C. Swallow, on the Geology of Kansas (Pub. Doc. 1866):

> "The June mean temperature at Fort Leavenworth, compiled from observations extending over a period of thirty years, was 71.31°. The mean of the summer months was 74.05°. The highest temperature observed in that time was 108°, the lowest 30° below zero.
>
> "The average annual rainfall for thirty years was 31.34 inches. Average of summer months, 13.03 inches. The individual months not given. The greatest amount of rainfall observed in one year was 59 inches — in 1858; the least amount in one year — 16 inches — in 1843. The total amount that fell during the summer months of 1854 (the year of the great drouth) was 5.70 inches."

In the Kansas Magazine for June, 1873, Prof. F. Hawn, in an article on "Influence of Forests on Climates," says:

> "In each year since 1865 the rainfall exceeded the mean of thirty-four years. The annual mean of seven years since 1865 was about 36.50 inches, yet this increase has not extended to the winter months, with the snow-water included. . . . It should, however, not be overlooked that the period in which this excess has accrued is too short to give a definite expression of the results, as we may be on a cycle favorable in the production of increased rains, which may soon close.
>
> "The rain line in Kansas is moving westward, the result of physical causes; and the order of natural selection and fittest to live is extending a more exuberant vegetation over the eastern margin of the great arid plain, decreasing evaporation and increasing local humidity." *

JULY.

There were few features in the weather of this month to distinguish it from July of past years.

The mean pressure was 29.871, which was but slightly below the July average. The highest barometer was 30.062, on the 5th; the lowest, 29.663, on the 11th.

The mean temperature of the month was 79.85°. The July average is 78.83°. The mean of July, 1878, was 80.30°. The highest temperature of the month, 97°, on the 10th; lowest, 61°, on the 30th. The highest July temperature ever observed at this station was 104°. The greatest daily range of temperature of the present was 25.5°, on the 8th; the least daily range, 7.5°, on the 1st.

The mean percentage of humidity for the month was 70.91; near 4 per

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* [Over six years have elapsed since this statement, yet the annual rainfall at this station is 37.12 inches, and it accords with general observation that the "rain line" has moved westward many miles since.—F. H.]

cent. above the average for July. The greatest daily mean was 86 per cent.,* on the 17th; least daily mean, 54.7 per cent., on the 10th and 11th.

The total rainfall, 4.99 inches, about 0.25 inch below the average. The greatest July rainfall recorded at this station was 9.99 inches, in 1872; the lowest, 2.04 inches, in 1873.

The prevailing wind of the month was south. Total number of miles registered, 4,912. Highest velocity, 33 miles from the N. W., at 9:25 P. M., on the 7th. During the month the wind was noted blowing as follows: N. 30 times, N. W. 9 times, W. 2 times, S. W. 10 times, S. 76 times, S. E. 40 times, E. 22 times, N. E. 19 times, and calm 9 times.

A lunar halo was observed at 2:40 A. M, on the 7th.

Six thunder-storms passed over the station during the month.

The number of clear days during the month, 8; fair, 15; cloudy days, 8; and the number of days on which rain fell, 12.

AUGUST.

The mean barometer of the month was 29.879. The highest range was 30.223, on the 9th; the lowest, 29.596, on the 23d.

The mean temperature of the month was 77.6°, which was about normal. The temperature during the month was very uniform. The highest temperature was 96°, on the 4th; the lowest, 52°, on the 17th. The greatest daily range was 29°, on the 10th; the least, 9°, on the 6th.

The mean percentage of humidity was 59.7—about 4 per cent. below the normal. The greatest daily mean was 83.3 per cent., on the 11th; the least, 49.7 per cent., on the 29th.

The total rainfall of the month was 0.18 inch. The August average is 3.44 inches. No rain fell from the 6th to the close of the month. The greatest rainfall recorded at this station was 6.66 inches, in 1872; the least, save the present year, was 1.74 inches, in 1874.

The prevailing wind of the month was south. Highest velocity, 24 miles, from the south, at 12:20 P. M., on the 27th. The wind's direction was noted 217 times, as follows: N. 43 times, N. W. 4 times, W. 5 times, S. W. 17 times, S. 97 times, S. E. 24 times, E. 8 times, N. E. 8 times, and calm 11 times.

The number of clear days during the month, 13; fair days, 13; cloudy days, 5; and the number of days on which rain fell, 5.

A lunar halo was observed at 2 P. M., on the 8th.

There were no thunder-storms during the month.

SUMMER.

The summer months of 1879 were the warmest since 1874. Their mean temperature was over 3° above the summer of 1878. There were no extremes of heat like last year, but the daily means were higher and more constant. The extremes of temperature were 97°, on July 11th, and 46°, on June 2d. The mean of the three months was 76.9°. The highest summer mean observed at this station was 80.5°, in 1874. The mean of the summer months for thirty-four years, ending in 1866, as observed at Fort Leavenworth, was 74°. The observations at this station since 1871, show a gradual increase over this mean—the mean of the past eight years being 76.7°.

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*[About this time Concord grapes began to rot.—F. H.]

The rains during the summer were very unequally distributed in time, as well as in space or area, and as you have seen, the first part was very wet, and the latter very dry. The total rainfall during the summer was 15.07 inches; nearly 12 inches fell before the 8th of July.

We have another abnormal condition, in the lateral distribution of those excessive precipitations, not easily accounted for. On examining the rain map of the Signal Service for June, you will find these excesses were local, and confined to a limited scope, while in the Gulf States there was a deficiency, and severe drouth in Texas.

SEPTEMBER.

The weather during this month was very constant, and there were few features to distinguish one day from another.

The mean barometer of the month was 30.02. The September average is 29.96. The highest barometer was 30.39, on the 24th; the lowest, 29.68, on the 26th.

The mean temperature of the month was 65.9°, just 1° below the September average, and about 2° below the September mean of the two previous years. The temperature of the first part of the month was remarkably low. The highest temperature was 90.5°, on the 27th; the lowest, 43°, on the 24th and 25th. The greatest daily range, 30°, on the 16th; lowest, 6.5°, on the 30th.

The mean percentage of humidity was 58.8, about 7 per cent. below the September average. It was the lowest September mean recorded at this station. The greatest daily mean was 43 per cent., on the 16th.

Total rainfall of the month was 3.41 inches. The average of September is 3.35 inches. Though the rainfall was up to the normal, still it was not sufficient to make up for the great deficiency of August.

The prevailing wind was south. The highest velocity, 30 miles from the north, at 3 p. m. of the 23d. Total number of miles registered, 5,364. Observations of the wind's direction were recorded 210 times, as follows: N. 53 times, N. W. 30 times, W. 3 times, S. W. 3 times, S. 55 times, S. E. 36 times, E. 6 times, N. E. 14 times, and calm 10 times.

Number of clear days, 13; fair, 9; cloudy, 8; and days on which rain fell, 7.

A small lunar halo was observed on the 27th.

Light white frosts occurred on the 20th and 24th, in the low grounds and valleys of the surrounding country, but doing no damage.

There were three thunder-storms during the month.

OCTOBER.

The past month was a most remarkable one, and has had no equal in the records of this station. The high temperatures of the first half of the month, followed in the latter part by continued cold and severe frosts, were extremes that are seldom felt in this section of the country in one month. The mild weather of the latter part of September and the first fifteen days of October, began to develop a second growth of fruit and vegetation, which was suddenly terminated by an adverse change in the weather on the 17th of this month. It is very probable that this second flow of sap in the fruit trees and vines, suddenly followed by freezing weather, may have a deleterious effect on the coming crop of the delicate species of fruit.

In the first half of the month the barometer changed but little, and very slowly, keeping very near the mean. In the latter part the changes were very rapid, areas of high and low barometer succeeding each other every few days. The most notable of these was the high area of the 23d, when the barometer at this station reached a maximum height of 30.646, the highest reading ever recorded at this station in October. The mean of the month was 30.06. The October average is 30.003. The lowest reading was 29.548, on the 16th.

This month was the warmest October ever recorded at this station. The mean of the month was 62.1°, being 7° above the same month of 1878, and 8° above the October average. The October average for thirty-four years, as observed at Fort Leavenworth, is given as 54.5°. The highest temperature was 84.5°, on the 8th; the lowest, 26°, on the 31st. There have been greater extremes observed in individual cases in previous Octobers, but the daily means were never as great as during the first fifteen days of this October. The greatest daily range was 32.5°, on the 27th; the least, 8°, on the 3d and 12th. The greatest daily mean, 78.2°, on the 9th; least daily mean, 40°, on the 30th.

The mean humidity of the month was 64.8 per cent., about 3 per cent. above the October average. The daily mean of the first half of the month was very high, and the latter part low.

Total rainfall of the month was 4.25 inches, being a fraction over double the October average. The rain all fell before the 17th. The greatest October rainfall recorded at this station was 4.87 inches, in 1877; the least, 0.72 inches, in 1875.

The prevailing wind of the month was from the south. Total movement, 5,042 miles. Highest velocity 26 miles per hour, from the south, at 2 p. m., on the 9th. Of 217 observations of the wind's direction, it was noted blowing from the N. 29 times, N. W. 30 times, W. 5 times, S. W. 7 times, S. 93 times, S. E. 37 times, E. 6 times, N. E. 3 times, and calm 7 times.

Number of clear days, 17; fair days, 10; cloudy days, 4; and days on which rain fell, 9. Polar bands were observed on the 21st and 30th.

MISCELLANEOUS.

The following notes made by Prof. Hawn of this city, (who has given considerable of his attention to the solution of meteorological questions,) as published in the Leavenworth *Daily Times*, November, 1868, are quoted as being of interest at present:

> "I notice by the press reports that a number of embryo meteorologists, in different sections of the country, are predicting a severe winter, and using as a base for their conclusions, the mild weather of the past month (October). While their conclusions may be applicable to the different sections in which they are located, they cannot by any means be used as a guide for the section in which Leavenworth is located. I have observed, and it seldom failed in this section, that the prevailing wind of the week preceding and the week following the autumnal equinox will be the prevailing wind until after the winter solstice. The prevailing direction this year was south, and this will give us a warm wind and mild weather, until the latter part of December."

Taking the foregoing as a guide, the early part of our winter will be mild, as the meteoric conditions of October of the present year were almost identical with those of October of 1868, which was followed by a winter that for mildness has no equal in this section, before or since. Prof. Hawn further says:

> "The mean temperature of October, 1868, was 57°; extremes, 86° and 28°. There were 22 days without a cloud, and for 20 days the winds were southerly. The first general frost occurred on the 30th. Up to this time the market was supplied with melons, cucumbers, green beans, and other tender vegetables and fruits, while the lawns of the city were still adorned with dahlias and other delicate flowers.
>
> "The last frost of the spring occurred on the 6th of May, giving 176 days free from frost. This immunity from frost is principally due to our system of winds, and the absence of oceanic influences.
>
> "There is, however, a great difference in the temperature of the days and the nights in this section, during the autumn months. The great fall of the mercury at night is not the result of an influx of polar currents, but an atmospheric condition peculiarly favorable to the radiation of heat from the earth's surface. On such nights we have cloudless skies, a dry atmosphere, and, mostly, not wind enough to produce the least refraction in the ascending heat.
>
> "The beginning of autumn is generally also the commencement of our dry season for then the great source of our rains in the Rocky Mountains has measurably become exhausted, or is again locked up in the embrace of an Arctic temperature.
>
> "Then the continental winds become dry, and in passing over the extensive plains that yet retain much of their accumulated summer temperature, these, with a cloudless sun, impart to the atmosphere a genial influence that often prevails to the close of autumn, and is sometimes protracted through a portion of the winter."

From Prof. Hawn's published notes, I also learn that in the first part of October, 1868, a severe and extensive snow-storm swept over the Northern and Eastern States, and in its general characteristics was almost identical with the one that passed over the same sections the latter part of October of this year. Following the snow-storm of 1868, was a very cold wave that penetrated far into the Southern States. On October 10th, a heavy frost occurred at Nashville, Tenn., while at Leavenworth, Kas., three degrees farther north, the mean temperature of the same night was up to summer heat, and it did not freeze here until 28 days after.

November, of 1868, was exceedingly mild, and was characterized by its clear sky and smoky atmosphere. Mean temperature, 46°. Highest temperature was 93°, on the 7th; the lowest, 4°, on the 30th.

The mean temperature of December, 1868, was 36.3°, which is over 6° above the mean of thirty-four years. The highest temperature, 64°, and the lowest, 19°. January and February were also mild. Of February, Prof. Hawn's published notes has the following:

> "The weather of February (1867) was but a repetition of the preceding winter months, clear and pleasant, and there was not a day but that out-door work could have been conducted with comfort. While our winter was mild and pleasant, in the Northern and Eastern portion of this country, and in Europe, the winter was unusually severe. The scope of country exempt from the rigor of this winter, extended along the Rocky Mountains, from New Mexico to Helena, Montana, east on a general line, including Jefferson City, Mo., and south to Arkansas.
>
> "There seem to be periods when distinct meteorological conditions prevail over this section, unaffected by outside influences—for in the period just under review, all the important changes occurring here were reflected over the district with great fidelity, differing in degree only, and progressing from the west."

NOVEMBER.

The month was remarkable for the excessive rainfall, high temperatures, and frequent thunder-storms. On the 8th and 11th each, over two and a half inches of rain fell.

The mean barometer of the month was 30.038, which was near the normal. The highest was 30.710, on the 20th; the lowest, 29.488, on the 8th.

The mean temperature of the month was 44.6°—just 5° above the November average. The highest temperature was 73.5°, on the 7th; lowest, 16°, on the 20th. The greatest daily range was 28°, on the 27th; least daily range, 10°, on the 18th and 28th.

The mean humidity of the month was 69.4 per cent., about 5 per cent. above the November average. The greatest daily mean was 90.7 per cent., on the 3d.

The total rainfall during the month was 7.85 inches. Of this amount 5.14 inches fell in two storms, on the 8th and 11th. The November average is 1.70. It was the greatest rainfall ever observed here.

The prevailing wind of the month was south; highest velocity, 32 miles, from the south on the 8th, and from the north on the 19th. Total number of miles registered, 5,779. The direction of the wind was recorded 210 times, as follows: N. 38 times, N. W. 49 times, W. 13 times, S. W. 4 times, S. 66 times, S. E. 23 times, E. 7 times, N. E. 7 times, and calm 3 times.

Number of clear days, 9; fair days, 12; cloudy days, 9; and days on which rain fell, 11.

The first snow of the season fell on the 28th.

There were five thunder-storms during the month.

AUTUMN.

The temperature during the first part of the season was about normal, the middle part very high, and latter part normal.

The amount of rainfall was greatly in excess of the average. The autumn average for this section is 7.14 inches. The present season we had 15.15 inches. The mean autumn temperature for thirty years, as observed at Fort Leavenworth, is given as 53.7°. The mean here of the autumn just closed was 57.5°.

The average rainfall in autumn observed at Fort Leavenworth during the same period was 7.57 inches. The rainfall during the past three months was just double this average.

The following table gives the average autumn temperatures and rainfall in degrees and inches at this station during the past seven years:

Year.	*Temperature.*	*Rainfall.*	*Year.*	*Temperature.*	*Rainfall.*
1872	53.0°	6.34 in.	1876	52.4°	9.22 in.
1873	52.6	6.09	1877	54.0	9.26
1874	54.6	10.45	1878	56.0	5.56
1875	52.4	3.08	1879	57.0	15.51

It is readily seen that the mean temperature and rainfall in the past autumn was largely in excess of any of the years embraced in the above table, except the present year; and as previously stated, the rainfall was just double the average for thirty years at Fort Leavenworth, Kas., three miles above the station.

SAMUEL W. RHODE,
Sergeant Signal Corps, U. S. A.

DISCUSSION ON THE REPORT.

J. W. ROBSON: When I first entered Kansas I was advised not to settle farther west than the west line of Davis county, but I did not suit myself until I reached Dickinson county. I found evidences of moisture all around me. In 1875 we had heavy rains; in 1876, all we needed; in 1877, heavy rains; in 1878, sufficient to grow a crop. The main cause of drouth in western Kansas arises from the vast uncultivated area. Those extensive plains, covered with a hard, grass-covered surface, turn all the rainfalls into the low lands and streams, and through those channels the moisture passes off. Rains fail to saturate the ground having such a water-proof surface. Place those lands under deep tillage, and they will hold the rains which fall and supply all that is needed for the production of crops.

E. A. COLEMAN: Water-courses attract the currents of moisture in the atmosphere, and where such courses do not exist rains do not often fall.

N. P. DEMING: My observation will sustain the position of Mr. Robson.

Adjourned.

TUESDAY AFTERNOON.

President Gale in the chair.

METEOROLOGY.

Discussion on Prof. Hawn's report resumed.

J. W. Robson: October was very warm, yet I cannot discover any injury has resulted. I am confident of a heavy crop of fruit in 1880.

Abner Allen: I cannot see that the fruit buds have suffered any injury up to this date.

A. N. Godfrey, Madison, Greenwood county: Pear trees blossomed full the past autumn, and were in bloom when first frost occurred. It does seem to me that trees in such a condition must be injured. Peaches are not injured. Prospects are for a fine crop of fruit in 1880.

F. Wellhouse: Can see no injury among the apple, peach or blossom buds of any kind. Peaches are some swollen, and an extreme, say 15° below zero, may destroy them. Small fruits are promising at this time.

REPORT OF COMMITTEE ON BOTANY AND VEGETABLE PHYSIOLOGY.

BY J. W. ROBSON, CHEEVER.

The chief office of the stem appears to be to elevate the leaves, the flowers and the fruit into the most favorable position for receiving the influence of light, heat and air, on which their full development depend. Accordingly, we usually find it most developed, in those kinds of plants in which one portion of the surface is set apart for the absorption of fluid, and another for its exposure to these influences. In the tiny plant called red snow, (*Protoccocus Nivalis,*) and in others of a similar grade of organization, we find the whole surface adapted to absorb, and the whole surface equally exposed to the air; there is, therefore, no necessity for a stem. But as soon as the plant sends roots into the earth it elevates the other portion above by means of a stem, and in this stem there is a set of channels or passages which serve to convey the absorbed fluid from below upwards. Among the fungi, destined to live but for a short time, and then speedily to decay, there is no necessity for providing the short stem with the toughness required in the trunk of the lofty forest tree, which braves the storms of centuries. And accordingly we find that whilst in the former the tissue is soft and cellular, resembling that of the rest of the structure, in the latter it is firm, consisting almost entirely of woody fiber, and that this is consolidated by the deposition of hard matter within its tubes.

Between these two extremes of softness and toughness, there are a great many intermediate conditions. In flowering plants which only live for one year, and are hence known as *annuals*, the stem is usually *herbaceous* — that is, it consists almost entirely of soft-cellular tissue, but contains, however, some bundles of woody fiber and vessels, which may be traced to the stalks of the leaves. These are commonly known as the *strings* of vegetables whose stalks, leaves, or roots are eaten, such as asparagus, spinach, turnips or radishes; and that degree of *stringiness* which makes such plants unfit for the table, when their growth is too far advanced, results from the increased formation and toughness of the woody fiber, towards the end of the season. In those plants, however, the duration of whose life is greater, the stem gradually becomes consolidated by the formation, in each year, of a new set of these bundles; so that in time, the soft-cellular part bears but a small proportion to the whole. Herbaceous and woody stems are at first formed on the same plan; the structure of a first-year's branch of an oak being essentially the same with that of the stem of an annual pea. The foundation is laid by an extension of the cellular tissue from which it springs at first, this being the kind of structure which most rapidly increases; and the consolidation of this is then gradually effected, by the deposition of woody fibers in it substance.

But the stems of flowering plants are not all formed upon the same plan; in fact, there are two different modes in which the woody bundles are arranged in the stem; and to one of these they may be all referred. If the stem of the asparagus be cut across, it will be seen that they are distributed at intervals through its whole substance. On the other hand, in the stem of a pea they would be seen regularly arranged in a circle, a little beneath the exterior. The former, if it continued to grow, would have its new bundles deposited in the *interior* of the stem; while the latter, if it survived a second summer, would have a new circle of woody bundles deposited on the exterior of the first. The former grows internally, from without inwardly, and is called an ENDOGEN; the latter grows externally, from within outwardly, and is called an EXOGEN. To the *first* division belong the palms, bamboos, canes, and many other hard-stemmed and lofty tribes, which inhabit tropical climates. Their stems are cylindrical, being of the same thickness from the top to the bottom. Their mode of growth is this: a hollow stem shoots up to a certain height, and there stops; layer after layer of woody fiber grows in the interior of this hollow stem, till at length a period arrives when the outer coats are so hardened and distended as to yield no longer; the stem has then attained its full growth in horizontal dimensions, and offers a broad, flat, circular surface to view, which has scarcely risen in height above the level of the ground. In this stage it resembles the stump of the trunk of a tree which has been cut down. The following spring, there being no room for a new layer of wood to extend itself horizontally, it shoots up from the center of the stem vertically; fresh layers every year perforate this central shoot, till it becomes hard, compact, and of the same horizontal dimensions as the base; the second period of growth is complete.

The leaves and fruit of this division of plants grow from the center of the last shoot, and form a magnificent crown of gigantic leaves; cut this off below the leaf stalks, and the tree perishes.

Endogenous plants have no real bark on their stems; the external coats of wood are so much hardened as to render such a preservation unnecessary. Some of our most useful and ornamental plants belong to this division—corn, sugar cane, all the cereals, all the grasses, and all the lilies and bulbous-rooted plants.

To the exogens belong all the useful and fruit-bearing trees and shrubs of temperate climes; to them the remainder of this report will be devoted. If we cut across a young twig of any common tree or shrub, such as the ash, maple or elm, we shall observe that it consists of three distinct parts, ordinarily known as *pith*, *wood*, and *bark*. The *pith* is a soft, spongy substance, occupying the center; if a thin slice of it be cut, either across or vertically, and magnified, it is seen to consist of cellular tissue, the cells of which are mostly of a very regular form. This soft, pulpy body does not grow or increase in size with the tree, but retains the same dimensions it had originally in the young stem. When young it contains a good deal of fluid, and has a greenish hue; when the stem is older, it becomes white and dry, and in very old trees it is often found to have shriveled up and almost entirely disappeared. The first layer surrounding the central pith grows freely during the first season, but the following year it is inclosed by a new layer; being by the pressure of this layer prevented from extending laterally, it makes its way where there is no pressure, that is to say, vertically. When, during the third season, a third layer surrounds and compresses the second, this, in its turn, escapes from the bondage by rising vertically. This process goes on year after year, so that the stem grows in height at the same time that it increases in thickness. This mode of growing renders the form of the stem conical, the number of layers diminishing as the stem rises. During this annual growth the prolongations of the pith still exist, but they become narrower in each ring and at last appear merely as lines diverging from the center. These are termed *medullary* rays, and their office is to maintain a constant connection between the pith and interior of the stem and the bark or exterior. The thin plates which they form, crossing as they do the direction of the fibers of the wood, are known to cabinet-makers as the *silver grain.*

These layers of wood attain a state of maturity when they become so hard, by continued pressure, as to be no longer susceptible of yielding to it. The number of rings denote the number of years the stem has existed. But there is reason to believe that in tropical climes, where many species of trees have two and even three successions of leaves in a year, a corresponding number of layers will be formed.

The wood is inclosed by the *bark*, which is, like it, formed in regular layers, only the growth is precisely the inverse of that of the wood; that is to say, it is *endogenous*, its layers growing internally. The new soft coat of bark, therefore, lies immediately in contact with the new soft layer of wood. Near the close of the spring the bark becomes loosened from the wood, with which it was previously in close contact, and a glutinous fluid, termed the *cambium*, is found between them. This may be observed by stripping the bark from almost any twig at that season of the year. The outer coats of bark frequently do not grow so rapidly as the woody layers beneath, and the stem becomes *hide*-bound. We have a familiar example in the Morello cherry. In the case of the birch, the epidermis alone fails to grow, and it is thrown off in ribands. In the plane tree, (*Platanus occidentalis,*) the whole cortical envelope is hurt and falls away. It is this which produces the ruggedness in the stem of the apple tree. In the grape-vine the whole bark is thrown off annually. This is also seen in the oak, (*Quercus suber,*) in which the cellular layer is so largely developed that it is used extensively in the arts by the name of cork. It is in the vessels and woody tubes of the *alburnum* (or white wood) that the fluid absorbed by the roots is transmitted to the opposite extremity of the stem; and these vessels communicate with those of the leaves, which receive it from them. In the *liber* (or inner layer of the bark) the woody tissues have a somewhat different form, and it has been supposed by some, because they differ, that they are destined to a different function from that performed by the woody fibers of the *alburnum.* The function attributed to them is that of conveying back from the leaves the juices of the plants which have been there elaborated out of the sap brought up by the vessels of the *alburnum.* This has been called by many theoretical writers "the descent of the sap." There is, however, good reason to doubt as to whether there is any such definite descent of the sap as is taken for granted by the above theory. Our settled conviction is, after fifty years' observation and close attention, that the sap does not descend at all, but is elaborated and retained during its upward flow. But we are anticipating a future report on the "Circulation of the Sap."

As the bark is sufficiently distensible to admit of the increased diameter of the interior of the stem, there is no necessary limit to the age of exogens, and there are many unquestionable examples of such trees having obtained an enormous longevity. At Ellerstic, in Scotland, the birth-place of the immortal Wallace, exists an oak, which is celebrated as having been a remarkable object in his time; and which can scarcely, therefore, be less than 700 years old. Near Staines, England, there is a yew tree older than Magna Charta, and the seven yew trees at Fountains Abbey, in Yorkshire, are probably more than 1200 years old. Fruit-bearing trees seldom attain a great age. Downing refers to two apple trees in 1848, which were then 140 years old. We recollect seeing in 1830 the original Hawthornden apple tree, at that time over two hundred years old. There are pear trees on record in Europe of great size and age. M. Bosc mentions several which are known to be over 400 years old. There is a very extraordinary tree in Home Lacy, Herefordshire, England—a perry pear—from which were made more than once, 15 hogsheads of perry in a single year. In 1805 it covered more than half an acre of land, the branches bending down and taking root, producing others. Loudon, in his work on trees, says it is still in fine health.

Another specimen, perhaps the oldest in this country, is the Stuyvesant pear tree, originally planted by the old Governor of the Dutch colony of New York, more that 200 years ago, and is still standing in fine vigor, on what was once his farm.

The altitude attained by some species of trees is wonderful. Half a century ago, single specimens of white pine (*Pinus strobus*) were frequently met with, having a diameter of six feet and an altitude of 250 feet. The sugar pine (*Pinus Lambertianas*) on the northwest coast of the United States, grows to the height of 250 feet; and the Douglas spruce, (*Abies Douglasii,*) whose size is gigantic, is not unfrequently met with 300 feet in height of stem. The mammoth redwood tree of California, (*Sequoia gigantea,*) has widely attracted public interest on account of the enormous dimensions of its stem; it has reached the altitude of 400 feet. And the diameter of the famous "original big tree" was 23 ft. 1½ in., inside of the bark, which was two feet thick. The blue gum of Australia, (*Eucalyptus globosa,*) produces a monster stem. Walter Hill, an English botanist, found the blue gum in the interior of Australia, measuring at three feet from the ground 160 feet in circumference, and 80 feet in girth at 56 feet from the ground.

But there is a limit (from their peculiar structure) to the age of *endogens*, for the continual addition of new woody bundles to the interior so much compresses those which were previously contained in the stem, that they are no longer pervious to fluid, and the tree dies. Nature, it is true, sometimes provides a remedy for this in the splitting of the hard envelope, which allows the interior to dilate; and this is being successfully imitated by art—vigor being restored to the palm when languishing, by splitting down the exterior of its stem with a hatchet.

The products of the stem have always been a very large factor in the commercial transactions of nations. Thus we find in the earliest records, the value that was placed upon shittim, sandal and cedar woods, and fabulous prices were paid for gums, frankincense and myrrh, showing that the addition of fragrant odors was regarded as rendering the sacrifices offered to the Deity more acceptable. In more modern times, the trade in perfumed bark and wood has been simply immense. In some trees the aromatic principle is strongest in the barks, as cassia and cinnamon, the sassafras of Tasmania, in the atherosperma, moschata, croton cascarilla, and the *Eleutheria* of the Bahamas. The *Ocotea aromatica*, from New Caledonia, possesses a strong sassafras flavor. There is also a very fragrant bark yielded by the *Alyxia aromatica*, of Java. From Tasmania we have the muskwood, (*Eurybia argophylla,*) the native boxwood, (*Bursaria spinosa,*) and the scent-wood of the same island has an odor similar to that of the Tonquin bean. From Tahiti comes the *Ixora odorata*, with its highly-fragrant wood. In Australian woods, the scented myall (*Acacia homalophylla*) has an intense and delightful perfume of violets, and the *Eucalypti* furnish not only most fragrant woods, but also timber of fine and elegant colors. In fact, when it comes to beautiful woods, irrespective of perfume, the whole world is made tributary, and many yet remain unnoticed because they have not yet become fashionable. In this respect the forests of the United States will be found a mine of wealth, to be worked in the future. We have all the useful, and yet we do not lack for beautiful woods, for ornamental work; the cabinet cherry, curled and birds-eye maple, honey locust, and zebra wood, do not make up the list, for we have the black walnut, the prince of cabinet woods, which has long ago taken the palm from mahogany. Our list of building woods is not a large one. Headed by the white pine, whose billions of feet of lumber freights tens of thousands of long railway trains, and covers thousands of acres of river and lake surface, it embraces the building and the cabinet lumbers, the implement and the machine maker's strong timbers, the wheelwright's material, the cooper's stuffs, and the material for the innumerable small-wood manufactures, down to the fine boxwood block upon which the skilled wood graver cuts his lines.

The stem has few diseases, and these few are produced by different causes, such as wet, undrained soil; sudden and violent changes of temperature during early fall; severe pruning of a barbarous character; and injuries received from the whiffle-tree, and inroads of cattle. The pear blight is one of the most formidable diseases with which the pear culturist in Kansas has to contend. With a very few exceptions every variety of this luscious fruit is liable to its attacks. Whether it is caused by the sun, the atmosphere, insects, or fungi, remains in doubt, some cases in various localities favoring one opinion, some another. The venerable Dr. Howsley we think gave the correct opinion in his valuable paper read at the Emporia meeting of this Society. This paper will be found at page 80, Vol. VI, of the Transactions of this Society. Every member should read this paper, and re-read it, and ponder it well. It will amply repay the labor. This disease appears in the trees at different seasons of the year. In February, 1877, it was distinctly seen that all our finest varieties were killed with the blight. It attacks the trees also at different periods during the growing season, and is generally seen in the young, growing parts first. We find that those varieties which mature their wood growth in September, and cast their foliage early in October, are untouched by this disastrous disease. Sun-scald in the stem never occurs in fruit-bearing trees where the trunks are well shaded by the branches above. It is always seen in orchards where the trees are trimmed to tall bare stems. Where it appears, the only remedy (and a very simple one) is to pare off the dead bark, apply a plaster made of equal portions of cow-dung and clay, and cover with a coarse cloth. All our stone fruits are more or less liable to the malady called gum. It is probable that the presence of this disease here in the West is owing to the rapid and violent changes which take place in the winter and spring months, deranging the flow of the sap, and causing it to accumulate in masses; it is also owing in some measure to the bark of the stem not yielding naturally to the growth of the wood.

The cherry tree has a very powerful bark, unyielding in its nature. We have often seen about a foot or more of the stem of the tree several inches smaller than the parts above and below it. These are cases of obstinacy in the bark to expand, and can easily be remedied by cutting longitudinal incisions on the contracted part of the stem. But the great cause of this disease is the vandal practice of severe pruning, by too many of our orchardists, who, with pruning knife and saw, denude their trees of those very parts which are all required for the successful issue of those wonderful processes which Nature is carrying on all around us in the garden, orchard and grove.

The stem of the tree has many insect enemies which have seriously injured and destroyed thousands of trees in our State. We refer our brother horticulturists to the able and exhaustive report of G. C. Brackett, in Vol. VIII, page 202, of the Transactions, for information concerning these insect pests.

But if insect enemies have injured "their thousands," there are three animals belonging to the natural order *Rodentia,* which have destroyed their "tens of thousands." We refer to the American hare, (*Lepus Americanus,*) the rabbit, (*L. Nanus,*) and the common meadow mouse, (*Mus cucopus.*) Their destructive habits are so notorious that they constitute a theme for discussion at nearly every meeting of this Society.

All of which is respectfully submitted.

SELECTION OF THE FITTEST.

BY MARTIN ALLEN, OF HAYS CITY, KANSAS.

We believe it is a well-settled axiom, that "the fittest survives," but this is in the mighty struggle for existence that has gone on continually among all living things, both animate and inanimate, from the beginning up to the present time. Man has aided Nature and himself to some extent in this struggle, by selecting animals, trees, fruits, vegetables and cereals, and in cultivating and distributing them in all parts of the civilized world. Among the very most rude types of mankind only is this struggle of Nature left entirely to itself, unaided in some way.

Many sorts of trees grown from seed vary greatly, probably as much as well-established breeds of animals do—possibly more; probably no two are precisely alike. Take, for example, the cottonwood: a quarter of a century ago it was the leading rapid grower among the soft-wooded trees in the prairie regions of Illinois, and we think it has at one time or another risen to this position in each of the prairie States of the great Northwest, it certainly holds this place now on the plains of western Kansas, from whence we write. Unfortunately, science seems only to know two sorts of this tree, their difference being known by the bark of the young shoots, and the indentations in the edge of the leaf. Wood-choppers know two sorts, namely, the white and yellow; and tree vendors talk fluently to their customers about these two sorts, and especially about the great merits of the yellow sort, which they have to sell. The very important fact that these sorts are only known by chopping into their wood and noting its color and quality, seems to be overlooked, for they cannot be distinguished by any outward signs in the young tree. The most casual observer knows two sorts of this tree—the large-leaf variety, spreading almost from the foot of the Alleghanies to the Missouri river, and the small-leaf variety, from the Missouri to the Rocky Mountains. The white and yellow sorts both extend into and form a part of both the large and small-leaf sorts. Practical tree growers have still other distinctions, such as upright, spreading, and drooping; my own grounds affording one that may prove to be worthy of propagation as an ornamental weeper. He who would cultivate this noble tree, and at once arrive at the best and most uniform results, should first determine by actual experiment with the ax, that he is getting the right quality of wood; he should also be satisfied that his tree is an upright and rapid grower; and that it is also a male tree, so that the nuisance of seed floating in the air from his forest may be avoided. And when the best selection in all these particulars is once made, propagate it by cuttings, which simply continues the original; in no other way can the best and most uniform results in rapid growth and quality of wood be reached.

Of our hardest and best wooded trees, the Osage orange is one of the most promising on the plains, but it, too, varies greatly when grown from seed, some trees making a growth of six inches in diameter, while others, equally well situated, make but two, or at best but three inches. Upon closely observing two such trees, it will be found that they differ somewhat in their general make-up, from the very first year of their growth—the slow grower has small leaves, and the ends of its branches are more tapering; while the rapid grower has leaves twice as large, and its shoots and branches maintain their thickness better toward their end, or terminal buds. Therefore, we apprehend that the best results in growing timber from this tree will be obtained by selecting the best specimens of the large-leaf sort from the seed-bed; or, if from the hedge-row, carefully dig the tree selected in the fall—make its roots into cuttings—pack in sand in the cellar until spring, then plant carefully in good, well-prepared soil, where they are to grow into timber, and cultivate well for two or three years. Do not plant among corn, as this tree will not endure shade.

And so may this plan of selecting the fittest or best specimens of its kind extend to almost, if not every variety of tree grown from seed. In some sorts the continuation of such selection can best be made by layering; others of necessity must be made by grafting; while others readily extend themselves by sprouting from their roots.

The belief that the same principles of selection that have been applied to our fruit and ornamental trees may be safely and profitably applied to our timber trees, has prompted these hasty suggestions. If thought, from which action comes, should be the result, I shall be much pleased.

It was announced that the Indiana State Horticultural Society was holding its annual meeting on same days with the Kansas Society, and on motion the following dispatch was ordered forwarded:

TELEGRAM.

Holton, Kas., Dec. 16, 1879.

To the Indiana State Horticultural Society, Dublin, Ind.: The Kansas State Horticultural Society, now in session in this city, send you kind words of greeting. Our sessions promise most successful results. That your sessions may meet your most sanguine expectations, is the sincere hope of your co-laborers in the good work, on the *American desert.*

E. Gale, *President.*

G. C. Brackett, *Secretary.*

DISCUSSION ON REPORT.

Martin Allen, Hays City: We have had some difficulty in my county in determining what varieties of trees to plant, but with experience we are becoming successful, and in reasonable time will be able to show as good timber as the eastern parts of this State. We have a greater altitude, different climatic conditions and soil to contend with; some varieties which make an upright, vigorous growth in the eastern counties, become dwarf and stunted with us.

E. A. Coleman, Lawrence: Many of the new-comers to this State have but a faint idea of forest-tree growth in Kansas. The experience of the old settlers must be given to them as a guide, and here is an opening for a good work by this Society. Forest trees as well as fruit, must be grown on our western borders, and I wish to urge all who own an acre of land, to plant trees, and our friends on the plains to keep planting. If one variety continues to fail, try others. Trees you must have, and my word for it, trees you will have, if you persevere.

J. W. Robson: I was called a fool and a lunatic, and laughed at, in an early day, for advocating tree-planting in Dickinson county, but I have succeeded, and now the laugh is turned. "He that laughs last, laughs the best." My advice is not to plant trees, but cuttings and seeds. Plow and mark as for corn, and in the checks plant the cuttings or seeds as you have them — most seeds can be planted in spring time. Elms must be planted as soon as ripened in May, same of silver-leafed or soft maple. A vast amount of hard work required in planting trees can be saved by planting the seeds or cuttings.

Secretary: I am in possession of a paper from Prof. Hawn, which perhaps will be proper to discuss in this order. The paper is as follows:

Two eminent savants in Europe recently made extensive tests on the influence of electricity on the functions of plants. One of them was very decided that it had a healthful influence, while the other held that it depended on contingencies, such as the nature of the soil, its moisture, etc. Several years ago, on taking up flowering-plants for winter display, I fell short of pots, and substituted cast-off fruit-cans. During the winter, I found a material difference in the plants, in favor of those in the tin cans. A friend on a visit transferred a mignonette from the border to a flat oyster-can, with but little care, intending to re-pot it on her return home. When leaving us the weather was too inclement to take the plant, and it became incorporated with our lot. This plant was peculiarly conspicuous for its luxuriant profusion of flowers during the whole winter. Since then I have used tin cans and clay pots in about equal numbers, and in most cases those plants in the cans were the most healthy. I have spent much thought on this subject to account for the difference, without solving the problem; nor am I ready to adopt as conclusive that the metal of the tin cans conducts electricity to the plants, or that it has beneficial effects.

DR. STAYMAN: Have grown plants in tin cans and earthen pots the past twenty years, with no apparent difference. The only possible result must be in the conducting power as a medium. The color of plants and flowers is dependent upon the condition of vigor and health. Variegated plants, as is accepted, are diseased ones.

J. W. ROBSON: The objection to earthen pots is the facility they give for too rapid evaporation through their sides. I prefer common pots plunged in a base of sawdust. This method retards the evaporation of moisture through their sides. A certain amount of electricity is essential to plant life. Its effects upon the growth is quite marked in the development. Charcoal, which is carbon, added to the soil, conduces to a dark-colored blossom.

PRESIDENT: This subject is one having the greatest scope in its application and bearing upon vegetable growth in this State. Electricity performs a most important agency and becomes an important idea, but our climate is a peculiar one. It becomes dry as we rise in altitude, going westward. The nights grow colder and the evaporation of moisture increases, therefore the development of plants must necessarily grow less and less as we reach higher altitudes. This is an important matter for the consideration of those occupying our western lands. What would make a large tree in the Missouri valley will make only a scrub at Ellsworth, and so with varieties growing in Illinois. The vapor of our atmosphere does not extend upward to exceed 150 feet, and where the air is rare this vapor must rise beyond the reach of plant life. Prof. Tyndall said: Remove the vapor from the air of England only for a single night, and all plants would die. Charcoal is of itself insoluble, and hence cannot in form enter into plant life, but it is a powerful absorbent of gases. It must be united with the oxygen and nitrogen of the atmosphere before it can become plant food.

F. WELLHOUSE: It is impossible to over-estimate the importance of forest-tree culture to this prairie State, and the question of varieties is one of the greatest importance to be considered by this Society. Let us see what is Nature's preparation for the growth of forests. First, she grows a patch of hazel, then hickory, and then the oaks, elms, and such trees of a large size. Now man cannot undertake such a process of preparation, but as friend Robson says, "Sow thickly, and Nature's conditions are secured."

PRESIDENT: Trees draw the elements of life from the atmosphere largely, and as are the conditions of the atmosphere so is the character of wood development. We see these results demonstrated as we travel towards the Rocky Mountains. Nature provides for existing conditions. Take the oleander on the Gulf of Mexico, and you find it in its most vigorous condition. The provision is made in its leaf structure, (its breathing organs,) to endure the atmospheric conditions prevailing in that latitude.

REV. MR. MILLIKEN, Holton: We must recognize Nature's laws, and largely conform thereto. Plants depend on the atmosphere and soil, and sometimes the deficiency in soil is supplied by elements from the atmosphere.

J. W. ROBSON: Box elder makes an impenetrable hedge, and is next to the hard maple for a sugar orchard.

E. A. COLEMAN: The hard maple is found indigenous on the Big and Little Sugar creeks, in Linn county, in thriving condition; also growing finely in Douglas county.

MARTIN ALLEN, Hays City: Box elder succeeds with me; white willow is a failure. I have from 30,000 to 40,000 forest trees growing near Hays City, which are quite satisfactory.

Further discussion was suspended, to give place to the following paper:

WONDERS OF PLANT LIFE.

BY MISS SELINA M. ROBY, HOLTON, KANSAS.

One of our country's most noted men says: "Beauty was the angel of deliverance that led me out of darkness into light. My childhood was singularly destitute of moral influences, and my nature a seething caldron of ungoverned and ungovernable passions and propensities, but I loved nature; the beauty of twilight, the purity and freshness of early morning, would soften my most wayward mood, and subdue me even to tears."

It is not in the terrible tones, nor awful grandeur of a Niagara, the fury of the tempest, nor the magnificence of a varied landscape alone, that God speaks through his works; but while in these we may read the glory, majesty, and sublimity of the Creator, to the real student the still small voice speaks from every page of the great book of nature, and every object reflects something of his wisdom, love, and infinite power. The geologist finds it in the rough and jagged rock at his feet; the astronomer, in the silvery moon and twinkling stars that deck the sky above him; the chemist, in the mysterious combinings of the elements that compose all matter; the philosopher, in the laws that govern it; the naturalist, in the habits and life of the insect world; and the botanist, in the no less marvelous features and mysterious workings of plant life.

But a glance into the varied vegetable world opens to our view wonders and beauties that astonish us. We are amazed, that having eyes we have seen not, and having ears have heard not the lessons that are being constantly spoken to us. We are taught that something of the nature of every author is displayed in his works; that the grace and dignity from the sculptor's chisel are but a type of the ideal enshrined in his heart; that the exquisite colorings and skillful touches of the artist's pencil convey to us but faintly the wonderful conceptions that thrill and fill his very soul; that the burning words and soothing lays of the writer are but the outbursts from the fiery depths of passion, or the faint manifestations of the calm and peace that reign within. So with the works of nature: in them are displayed the attributes of Him who made them. When we have learned to read aright, we shall find God's word an unbound book, in which He reveals his love for us, through even the tiniest flower that rears its head at our feet. "Consider the lilies of the field"—all the glory of human efforts fail in comparison with the purity and simplicity of God's humblest works; but not to the lilies alone does He confine his wonderous workings. What other skill could have wrought so curiously and ingeniously the great variety of leaf, stem, and flower? What artist could have penciled and blended so harmoniously such delicate and various tints? What save the infinite power could have adapted all so admirably both to our use and enjoyment?

Here in Kansas we have not been forgotten: all over the rolling prairies, by the brook-side, in the sunshine and the shade, we find these tokens of God's love. The violet peering up from its hiding-place in the rough grasses, the many-colored wind-flowers, the beautiful wild indigo plant, the delicate sensitive-brier, the not uncouth milk-weed of so many varieties, the little wood sorrel, the plain but curious dandelion, the comical Jack-in-the-pulpit, the showy sages, the snowy boneset, the golden-rod, and numerous others of many varieties, all proclaiming in their own wild, sweet way, from early spring to late autumn, the praises of Him who formed them. Then, too, as if to cover with a mantle of charity the few blemishes, she has made for us, Nature has twined over the deformed trees and broken stumps, over the scraggy bushes and decayed logs, some of her loveliest vines and creepers, and to gladden the damp, shady nooks, has peopled them with her wonderful fern family. Yet in our admiration of them, so many of us fail to rightly understand or appreciate them fully! We accept them as objects that please the eye and gladden the heart, without any thought of their habits or structure, while but a little study would open to our view miniature worlds of marvelous wonders, and laboratories of incomprehensible workings.

With a knowledge of the structure, growth and habits of the vegetable kingdom, we are enabled to find in the marvelous mechanism of the coarsest vegetables that fill our gardens, a greater mystery than that of satisfying a healthy appetite; from the flowers that ornament our yards, we may obtain greater pleasures than those a variety of colors and odors afford the senses; the trees that shade our windows, receiving so gladly upon their swaying branches the burning rays of the sun, teach us other lessons aside from those of kindly protection, and that by a willing obedience to a higher power we grow stronger; in the homely nettle and thistle that resent so jealously the insult to their common claim upon our notice; in the mossy carpet at our feet. In every form of vegetable life from the lowest to the highest, there is displayed the wonderful workmanship of a Divine hand; yet of all the various features there are none more wonderful or beautiful, perhaps, than the cells of which the plant is composed, and their mysterious growth.

Every plant, from the simplest, which consists of but one cell, to the highest form, is a combination of minute cells, varying in size from one-thousandth to one-hundredth of an inch in diameter, and in length, from one-thirtieth to one-half an inch, and differing in form, material, and office, according to the tissue in which they are found. It seems almost impossible that the delicate blossom, the tender blade of grass, and the tree, with its woody fiber, its rough bark and its varieties of fruit, should all be but a collection of these little cells, but it is no less strange than true—*all* grew in the same mysterious way, from a little pulpy, bladder-like mass, so small as to be seen only by the aid of the microscope. The delicate walls of this little cell expand and divide it into two cells, which, in their turn, divide and subdivide, until it becomes a cluster of cells, and the little plant has shaped itself in the ripened seed. By the warmth and moisture of the dark earth when the seed has hidden itself in her bosom, this bundle of cells receives a new impulse, and gathering new supplies of the elements that enter into its structure, begins again to expand and multiply its numbers until it comes forth the little plantlet whose growth continues in the same way.

The primary form of the cell is globular, but it assumes different shapes, according to the laws of its growth and the external pressure. Those of the softer tissues are rounded, lobed, or irregular. Cylindrical or tubular cells exist in a greater or less quantity in the stem and woody portions of all plants, and give strength and toughness to them, thus affording them a support. The walls of these cells thicken as they grow older, until in the dense wood they are almost entirely filled up; here and there have remained thin places through which the sap flows. They do not form tubes as might be supposed, like a set of pipes, but are so arranged that, though forming long ducts, the sap or contents must find its way through the walls. Some are bound together in bundles with their tapering ends overlapping, and so crowded together as to form a solid mass; all run lengthwise through roots and stem and form the frame-work tissues of the leaves. These same cells or fiber, longer and more slender, form with those of the softer tissues, the bark. The walls of all these little vesicles are three: the outer a thin, colorless membrane, composed of cellulose; the inner a plastic, gelatinous substance, and between them a secondary layer, which in some is of a spiral form, as seen in the young elder and rhubarb stems; in others it forms rings. The epidermis or outer covering of all the softer growths consists of a layer of united empty cells, transparent and colorless. Its office is to check evaporation, though it does not entirely exclude the air from the tissues beneath it, but is cleft here and there by little openings called stomata. These are most abundant on the under surface of the leaves, and are guarded on each side by a little kidney-shaped cell, so constructed as to open or close the passage as the atmosphere is moist or dry. The rootlets, hairs, prickles, and thorns, are as all other parts—collections of cells.

The contents of these little vessels are various; some may contain only air, but the greater part contain a little globular atom, a semi-fluid called protoplasm, and of the same material as the inner wall; a sap that is continually flowing and acting, combining with the protoplasm, and producing new cells. The coloring matter of the tissue and the starch or nutritive matter are among the contents, as are also in solution in the sap, or in some other form whatever peculiar properties the plant may possess.

But the wonders do not cease here. If we inquire into the office of the different tissues and their uses, we find that each performs its part in the economy of the plant, and that *all* coöperate in the work of living and growing. If we allow ourselves to give but a thought to the various features of absorption, circulation, transpiration, and respiration, we are amazed that *this* life, which so much resembles animal life, should be but the one step between our lives and that of the inorganic rock. And if we closely observe their habits we are fully persuaded that some of them possess peculiar faculties denied to common vegetation. What causes the leaflets of the sensitive plant to close and its leaf-stalk to drop when rudely jarred? What causes the leaves of any plant when turned upside down to twist on their stem and present their upper surface to the light? What causes the leaflets of the wood-sorrel to turn downward at night, those of the honey locust to rise upward, while those of the sensitive plant turn forward, one over the other?

Ah! we have hardly dared guess the almost human powers our little friends possess, and we do not at all comprehend them, yet know that in wisdom He formed them all, and join with Longfellow in his tribute to

FLOWERS.

Spake full well, in language quaint and olden,
  One who dwelleth by the castled Rhine;
When he called the flowers, so blue and golden,
  Stars, that in earth's firmament do shine.

Stars they are, wherein we read our history,
  As astrologers and seers of eld;
Yet not wrapped about with awful mystery,
  Like the burning stars which they beheld.

Wondrous truths, and manifold as wondrous,
  God hath written in those stars above;
But not less in the bright flowerets under us
  Stands the revelation of his love.

Bright and glorious is that revelation,
  Written all over this great world of ours;
Making evident our own creation,
  In these stars of earth, these golden flowers.

And the poet, faithful and far-seeing,
  Sees, alike in stars and flowers, a part
Of the self-same, universal being,
  Which is throbbing in his brain and heart.

Gorgeous flowerets in the sunlight shining,
  Blossoms flaunting in the eye of day,
Tremulous leaves, with soft and silver lining,
  Buds that open only to decay.

Brilliant hopes, all woven in gorgeous tissues,
  Flaunting gayly in the golden light;
Large desires, with most uncertain issues,
  Tender wishes, blossoming at night!

These, in flowers and men are more than seeming,
  Workings are they of the self-same powers,
Which the poet, in no idle dreaming,
  Seeth in himself and in the flowers.

Everywhere about us are they glowing,
  Some like stars, to tell us Spring is born;
Others, their blue eyes with tears o'erflowing,
  Stand like Ruth amid the golden corn.

Not alone in Spring's armorial bearing,
  And in Summer's green-emblazoned field,
But in arms of brave old Autumn's wearing,
  In the center of his brazen shield.

Not alone in meadows and green alleys,
  On the mountain-top, and by the brink
Of sequestered pools in woodland valleys,
  Where the slaves of Nature stoop to drink;

Not alone in her vast dome of glory,
  Not on graves of birds and beasts alone,
But in old cathedrals, high and hoary,
  On the tombs of heroes, carved in stone.

In the cottage of the rudest peasant,
  In ancestral homes, whose crumbling towers,
Speaking of the past unto the present,
  Tell us of the ancient games of flowers.

In all places, then, and in all seasons,
  Flowers expand their light and soul-like wings,
Teaching us, by most persuasive reasons,
  How akin they are to human things.

And with childlike, credulous affection
  We behold their tender buds expand;
Emblems of our own great resurrection,
  Emblems of the bright and better land.

A vote of thanks was tendered the essayist.

Adjourned.

TUESDAY EVENING.

President Gale in the chair. Exercises opened with music.

ADDRESS OF WELCOME.

BY JUDGE HOAGLIN.

Mr. President, and Members: It affords me pleasure to perform the duty assigned me this evening, for, having been raised a farmer's boy, I can to some extent enter into the spirit of this assembling of the horticulturists of our adopted State.

Kansas has held a destiny. She occupies a prominent place in history, and in common with her sister counties, this, Jackson county, has had her share of prominence. Where you now see these gardens, orchards, and fine dwellings, you might have beheld the bleaching bones of a race now passing away, to give place to white men.

Kansas has been marked, in by-gone days, as the American Sahara, and unfit for else than savages and wild beasts. In 1853 settlers began to press out into these plains. The immigration followed the Kansas river. Up to that date the question of Kansas' utility to the civilized world was clouded in doubt. The increase of population in this county alone in twenty-five years has been quite twenty-eight fold; the increase in wealth ten fold; and the increase of the whole State has probably equaled this county. Such progress has not its equal in any State in the Union. May we not in twenty years reasonably expect that Kansas will lead all other States? Her soil and productive resources are valuable; her people enterprising; climate the finest.

The wealth of our State rests in her agricultural resources, and such being the fact, we can but extend to those intelligently engaged in that industry a hearty welcome; and to you, my friends, I do now extend a cordial welcome to Jackson county.

RESPONSE BY THE PRESIDENT.

Citizens of Holton: In behalf of our Society, I feel it a pleasant duty to respond to your address of welcome, more pleasant because our coming here to-night brings up before many of us the cheering and agreeable memories of a former meeting of our Society in your delightful town, when, in the warm summer time, we were welcomed with flowers and music, and a generous hospitality, to your homes. And as we realize how we have come among you now, we can only make the pleasant comparison, that you are now only rivaling your former selves.

There is this cheering thought to gladden us as we come together to-night: that in the pursuits of horticulture we know no caste. Its range is so broad and varied that in some way it strikes every man and women of culture in the wide world.

When the aims of our Society are understood, there is not an intelligent man or woman in any occupation or profession who does not sympathize with us, and in some directions at least, enter into our work. Do we consider the subject of fruit and fruit culture, there are very few who are not in some way interested in this field of horticultural work. Those who have given their thought, time and money to experiment in this direction, may be counted among the most intelligent and cultured men of the age. While they have looked to various occupations and professions for a competence, they have won renown, often, as the warmest friends of horticulture.

Do we turn to forestry in our discussions, we find ourselves at once in company with a large and cultured class of men, who are led on and encouraged in their work by a noble array of earnest and broad-gauged scientists, who have studied this subject by the light of the ages. Or if we glide, as we may naturally, from the culture of forests as an economic question, to the use of trees and shrubs for the adornment of homes and parks—that is, to the field of landscape gardening—we find that every man who has a home, whether in city or country, is an interested co-laborer with us. It matters little what the man's occupation may be; if he has even the least culture of mind, you touch this subject, and you touch him through his home. Or, turning from the ornamentation of grounds, we come to the vegetable garden and its claims on the attention of the family, and from the side of economy, comfort and health, we claim a hearing in every household. And when we come to the flowers, and plead that these little tokens of a purer and brighter world beyond may have a wider place in our hearts and our homes, we know that woman will ever give a glad response to our plea.

We are not then to work with a class of your community, but with all. We know no class or clan in horticulture. We come to work with man, for man to make the world a brighter and better home. For the very cordial welcome and the pleasant greeting which we have enjoyed this evening, we sincerely thank you. And permit me in closing to express the hope, as we are sure that we shall carry bright memories of our pleasant welcome here, when we go hence, may we leave such impressions upon your minds that you will desire to remember us as fellow-workers in a glorious cause.

PRESIDENT'S ANNUAL ADDRESS.

As we gather here to-night, we have abundant reason to adore the Great Father for the sparing mercies of the past year. While we meet here, surrounded by the mercies and the tokens of Divine care and love, we cannot remember without a shade of sadness that some who have often come to our convocations and cheered us with their earnest and eloquent utterances will meet with us here no more forever. One who has been with us so often and constantly shown a deep interest in our Society, has only just gone over the river. We feel that we are mourners with a host of beloved friends. How gladly would we send sympathizing words to his mourning family; but what greater consolation for them or for us than to feel, as we may, that his eyes are opened to the mysteries and glories of a better state, and that it is his unspeakable privilege to-day to gather fruit from the ever green trees that bend with their delicious burden in the paradise of God?

We should recognize the fact that many earnest and excellent workers have lately come into the horticultural ranks; and it is with the heartiest greeting we extend to them the hand of welcome. We welcome cordially those who have long dwelt among us, and yet not identified their interests with horticulture until recently; and to those who have come from other States to root themselves, as it were, by trees, and shrubs, and flowers, and lawns, and parks, with the soil of western Kansas, we give the most friendly greeting. Of many of these, Kansas will have abundant reason to be proud; and think me not presumptuous if I give utterance to the belief that not many years hence they will be proud of Kansas.

While we desire the coöperation of all earnest men in promoting the objects of our organization, we cannot expect this unless we set forth clearly the purpose which we have in view. In seeking to do this, we must first state that we wish in no case to occupy ground or to do work which belongs to other organizations. From a very early period, horticulture has been recognized as occupying a distinctive field, and as doing a work peculiarly its own. While many of our most earnest horticulturists have been broad-gauged and successful farmers, not a few have become so absorbed in the pursuits of horticulture that they have found little inclination or time for anything beyond its legitimate field. This will not seem strange, when we remember that fruit and tree culture has so little in common with the ordinary work of the farm.

We accept the fact that much of our work has to do with the question of profit and loss. When any department of horticulture presents itself to us as the means by which we hope to provide for our own necessities and that of our families, it is primarily a question of gain or loss. But we are to remember that almost the entire range of horticultural pursuits goes infinitely beyond the question of mere return in dollars and cents. There is a side to this question that mere money cannot measure. We are to remember that, while it brings man in close and healthful association with nature, it may so do it as to ennoble and purify manhood. As we pass along the streets of this thriving town, we may ask, to what intent are those beautiful plants and flowers gathered in yonder window? The tender hand that ministers to their daily wants will never close over any dollars that may come therefrom. But still, those clustered leaves are a joy forever. They are the glass through which we read the manhood and womanhood that lives within. They are educators. As those leaves draw in and transform the carbonic acid of the air into woody fiber, so they transform the mind. And what is true of that little window garden, is true of horticultural pursuits in general. While we recognize frankly the place that the dollar is to hold in horticulture, we should remember that there is something higher and better than this. There may be no money in flowers. They bloom on every hand; they send out their fragrance on every breeze. They put no money in the farmer's pocket. And still there is a wealth of joy in these tokens from a loving Father's hand, that gold cannot buy. Lawns and parks may be costly luxuries—those only who have wealth can afford to indulge in them; and yet they have an end in the culture of manhood that finite powers can scarcely measure. It is worth our while, then, to cherish beauty for beauty's sake. The love of the good and the beautiful is not something to be repressed, but to be cherished. We want, then, to scatter far and wide among all our people, the idea that one great purpose of this Society is to encourage the making of beautiful homes, and at the same time, to give our people to understand that true beauty is not synonymous with costliness. As dollars do not purchase beauty in the human form, they do not always do so in lawns and homes.

In a young State where all our homes are new or yet to be made, one of the live issues of the hour is how to make our homes beautiful. We have talked hitherto of flowers and shrubs and trees, as we must largely in the future, but we have seemed to forget that all these were only the units that go to make up that great sum, home, and that it mattered little how these were put together. These flowers and shrubs and trees are the alphabet of horticulture. For more than twenty years we have been studying this alphabet on the soil of Kansas, and some may think us not very apt pupils if we confess that we do not quite know all of our letters yet; and it is not improbable that we might detect a decided upward turn of the corners of the mouth with those who are relying upon an experience gained in the East for success in a Kansas climate. But we will endure that with the thought that soberer judgments will come with experience. It seems to me that it is time to venture beyond this study of the alphabet, and combine the elements into beautiful gardens, grounds, homes. Remembering that the elements out of which we must make our beautiful homes, gardens, parks, and lawns even, are different from those which can be used in the East, we must realize that we have a work in this direction that is peculiarly our own. Is it not time that we took this work in hand? It is for us to determine what can be done with the material that our soil and climate will permit us to use. Plans, then, of grounds suited to the wants of the town lot, the farm, and the extended domain of the wealthy land-owner, should in some way be made the subject of consideration before this Society; and these plans, carefully prepared, might appropriately be made from year to year a part of our annual reports. We need to become earnest students of landscape gardening. We owe it to our young State; we owe it to ourselves. I call your attention to this subject at this time, with the conviction that no more important matter can come before this Society than is involved in the question, "How can we encourage the making of beautiful homes?" There can be no question in regard to the primary importance of this matter. The only question is: Have we the capacity to move beyond the alphabet of horticulture? Gentlemen of the Society, I ask you to give it your earnest consideration, and devise, if possible, means by which you may promote the highest interests of horticulture.

Another matter specially worthy of our constant effort is the securing of trees, fruits, shrubs, flowers and vegetables suited to the peculiar climatic conditions of this State. Individual enterprise has been turned in this direction for twenty or more years, and a large amount of valuable knowledge has been gathered in the costly school of experience. This Society has sought to make that knowledge available in the interests of tree and fruit culture, and much of it is embodied in the fruit lists contained in our late reports. We commend to new planters the statements of that list as embodying the combined experience of our most successful fruit growers. In this work of securing new and desirable varieties we can in the first place take advantage of the effort and experience of others. Our fruit may be gathered up from every State in the Union, but experience so far points to the sunny South as the source from which we shall gather our most desirable apples, if not other fruits. We have hitherto drawn largely from the hardy fruits of the East and North, often with the most unsatisfactory results. Local considerations have doubtless led to this. But while the Ben Davis, Rawles Genet, Missouri Pippin, McAfee's Nonsuch and the Gilpin gradually creep to the front, we shall be constrained to look to our own or a more southern latitude for better fruit and longer keepers. In this connection it may not be deemed amiss to say that we owe to some of the older members of this Society a debt of gratitude not easily paid, for their untiring efforts in collecting and testing new varieties of fruits. But we look forward to the production of new varieties on our own soil. Our committees have been appointed with special reference to this work. Permit me to urge upon the attention of these committees and the Society at large the importance of keeping two distinct lines of effort clearly in view — the one is artificial fertilization, the other natural. The one consists in working upon the basis of known laws toward a certain end; the other looks to desirable ends through the doubtful channels of chance reproduction. The former seems to have science in its favor, the latter the wonderful fecundity of Nature, by which she pits her millions against the few uncertain children of science. While the former may demand the attention of the skilled scientist, and must ever be carried on under his hand, the latter will command the attention of every thoughtful lover of good fruit and beauty.

To the encouragement of all interested in this matter of new fruit, it may not be amiss to say that the great mass of all kinds of good fruit have been propagated from chance seedlings. Let no one be discouraged, then, in regard to the production of new and valuable fruit because he has neither time nor skill for artificial fertilization. Plant seeds, then, we say, of valuable fruits, and replant, continue to plant, and still plant until the bright suns and delightful summers of Kansas shall bring into being a fruit better than anything now known. This course will in no way stand in the way of more systematic and scientific efforts. And we shall be glad to know that efforts in this direction will be made by you until our list of fruit shall be greatly improved.

Our special efforts should also be directed to secure a more general understanding of the peculiar hindrances in the way of horticultural success. There is a bright side to horticulture; a great deal of poetry is mingled with its sunlight and leafy beauty. But there is a dark side, and a good deal of very sober prose; and it is well to teach this. In this practical age men are disposed to laugh at science, but it is about time that we awoke up to the fact that the future triumphs of horticulture will have their basis in science. When we see our fruit decaying and falling from the tree; when we see it eaten and ruined by worms, or spotted with fungus, and the trees dying before our eyes; while we find one orchard fruitless by reason of frosts three times out of four while others scarcely ever fail to produce fruit, in our helplessness we turn to science. The laws that govern vegetable growth should be more generally understood. There can be no question but that the peculiar habits of the insect world should be known by those who expect to be successful in fruit culture. And we cannot doubt but that the laws which govern all climatic changes concern in many ways all horticultural interests. Neither do we anticipate the highest attainments in horticulture without a knowledge of the principles that underlie all landscape gardening. There is a wide field opened before us. It is not supposed that this Society is to enter the breach and become directly the teacher of the people in science. We aim to reach the whole people somehow. We claim that the sciences that underlie our pursuit should be taught somewhere; and as the representatives of a large and respectable class in this State we claim a hearing in this matter. One year ago this Society appealed to our teachers, our Governor and State Superintendent asking that some measures might be set on foot which would ultimately secure the teaching of horticulture and its underlying sciences in our common schools as the only hope of the masses in this direction. We think that we have a right to demand that the elements of science that underlie the life-work of the people shall be taught to our children. This can be done only in the common school. Are we prepared to insist that a move must be made in this direction? I think we are; that we comprehend its importance, and are ready to make all necessary sacrifices to attain this object. If we are in earnest in this matter, let us review the former action of the Society, note the reception we received from the hands of officials, and knock a little louder for a second hearing.

Another interest that occupies a prominent place in the deliberations of this Society is forestry. The unprecedented immigration that is filling up so rapidly the entire western portion of the State, where there is so general a lack of fuel and forest production, makes the culture of trees a question of primary importance. There are not a few difficulties unquestionably in the way of entire success. There are some serious obstacles to be surmounted, perhaps not yet fully recognized. And yet, with due patience, care, and intelligent work, we must believe that forest culture will not only be a success, but that the success reached will be attended with the most beneficent results. Hence, this work is one of vast moment, and the interests of the State demand that it should hold a prominent place in the discussions of this Society. Facts to encourage and to direct in this work will be welcomed and practically applied, no doubt, by a larger class of men than any other class of facts that can be brought to our notice. The work already in progress in the western portion of the State, when taken as a whole is really grand in its proportions, and it takes no prophet's eye to see that at a not far distant day the bare rolling prairies of the great west will be transformed as by magic to a scene of beauty, wealth and glory, that no other equal area of country will furnish on the continent of America.

From whatever stand we view our work, it should be viewed as a work for man. Let us, as horticulturists, set a fitting estimate upon our work. Let us be true to ourselves. Let the far-reaching scope of our work be recognized. And with a consciousness of our destiny, let us go forward, to make Kansas blossom as the rose.

Adjourned.

WEDNESDAY MORNING,

(DECEMBER 17TH, 1879.)

The meeting was called to order by the President, and prayer was offered by Dr. Havens, of Holton.

ORCHARD CULTURE.

F. WELLHOUSE, standing committee on Orchard Culture, made a verbal report, as follows:

An orchard for safety and convenience should be near the house, and if properly arranged will form a beautiful background to the residence with its adornments. There occurs oftentimes a few moments of leisure that can be used in various ways to an advantage in an orchard if located near by. I would not sacrifice such conveniences for any advantages that I have any knowledge of occurring from a peculiar slope presentation or soil; in fact, I have been unable to discover any material difference in the variety of slopes generally found on our farms. One feature in a location I hold is quite important to observe in selecting the plat for an orchard, and is equally so with reference to locating the house, viz., let it be elevated as to its surroundings. I have always found that orchards upon a comparative elevation produce the most fruit.

E. J. HOLMAN: I desire to ask the committee what have been his observations this year, as to slopes?

F. WELLHOUSE: Most successful results were on northern slopes.

DR. J. STAYMAN: My orchards did not fruit this season, but an orchard almost adjoining me, on a low, flat piece of ground, bore a heavy crop. Varieties have as much or more to do with the success of an orchard, as anything else. Do not believe the Ben Davis or Winesap will succeed on poor land. There is not, in my opinion, a healthy tree north of the Kansas river, on the low lands, excepting perhaps the Duchesse of Oldenburg. I cannot discover any material difference in orchards pruned or not. Altitude produces beneficial results upon the health of orchards, and such as have been manured produce the best of results. In this, I refer to bearing orchards.

H. E. VAN DEMAN: My observations lead me to select an elevated spot, having a northern slope—having what some term a red or mulatto soil.

SAM. REYNOLDS: Prefer a mulatto soil, well underdrained.

J. M. MILLER, Emporia: The most productive orchards in my locality are planted upon bottom lands, which have no particular slope. I presume the reason lies in the fact that bottom lands are underdrained naturally; while our uplands have a retentive subsoil.

A. N. GODFREY: In Greenwood county, the uplands having a gravelly clay soil are preferable.

H. E. VAN DEMAN: Fruit grown in orchards planted on bottom lands can easily be determined by the black mould on the surface.

J. N. HALL, Oskaloosa: I cannot discover any material difference in the quality of fruit as produced by the direction of slopes in locations. Mulatto or common limestone soil inclined to shale is preferable. Some varieties, as Jonathan, Ben Davis, and Dominie, succeed on black soil; Rawles Genet produces fine fruit on high lands. In planting an orchard, care should be given as to varieties adapted to high and low lands. If people must plant on what is commonly known as "*gumbo*" soil, they must see that it has a thorough surface or subsoil drainagè. Manure should not be used on strong soil until it has been exhausted by heavy crops of fruit.

NOXIOUS BUTTERFLIES.

BY MARY E. MURTFELDT, KIRKWOOD, MO.

One does not like to prefer serious charges against butterflies. Of all the insect tribes, *they* are the popular favorites, and alone enjoy immunity from the aversion with which most people regard "bugs." Nor is this distinction unmerited. The preëminent grace and beauty of these "winged flowers," their dainty habits, in connection with their apparent harmlessness, could only fail to win admiration from those who are blind to all the charms of Nature. It seems, therefore, a most ungracious duty to pass the death sentence upon them. But truth compels me to say that in many cases they are not so innocent as they appear—that their aërial gambols have other objects than mere enjoyment of the summer sunshine; objects which often result in serious loss and disappointment to their human admirers. Harmless as they are in themselves, they are, nevertheless, the progenitors of various ugly and voracious caterpillars, which defoliate our trees and vines, mar the beauty of our flowers, and ruin some of the choicest products of our vegetable gardens. More than a half-dozen species of our prettiest and most common butterflies may be indicted on these charges, and these I shall aim to describe in this paper in such terms that they may be readily recognized.

It may be best at the outset to explain, for the benefit of those who have not studied entomology, that the order of scale-winged insects (*Lepidoptera*) is, in accordance with natural distinctions, separated into two vast sections or tribes, viz., butterflies and moths. The former are distinguished from the latter by their feelers or antennæ, which are *knobbed* or *enlarged* at the top, whereas the antennæ of moths, whether filiform or feathered, invariably terminate in a *point*. Butterflies, also, as a rule, have more slender bodies than moths, hold the wings erect, with the upper surfaces applied when at rest, and are strictly diurnal in their habits. There are many less obvious differences between butterflies and moths, but those mentioned will suffice for recognition.

As a rule, butterflies are much less injurious than moths, their eggs being comparatively few and for the most part deposited singly, and the larvæ being, in consequence, so scattered as to effect but little damage to the plant upon which they feed.

Among the butterflies that come under the ban are several elegant species belonging to the group popularly termed "Swallow-tails," from the tail-like or tab-like projections on the hinder edge of the lower wings. The "Swallow-tails" are mostly of large size, expanding from three to six inches. The prevailing colors are dark and rich, usually black or brown, ornamented with spots and shadings of orange; yellow, white and metallic blue, and green. The *Turnus* and *Marcellus* butterflies have the general color, yellow and pale green respectively, bordered and streaked with black, in which bright-colored spots are set. America can claim the precedence in the possession of this magnificent group of butterflies, some dozen or fifteen species occurring within the limits of the United States alone, while all Europe can boast of but two or three species, and those much inferior to ours in size and beauty. The majority of the swallow-tails are innoxious, their larvæ feeding upon indigenous shrubs and trees of no especial value, or appearing in such scant numbers as to do no harm to the plant that fosters them. The two most pernicious species with which we have to do are the "Asterias butterfly," (*Papilio asterias*, Cramer,) and the "Philenor," (*P. philenor*, Drury.) Both of these occur in greater or less numbers throughout the country, the latter being, however, much more abundant in the South than in the North. The first of these—the Asterias—is a black butterfly, having the body and wings ornamented with two rows of bright yellow spots. The space between the two rows of spots which form the border to the lower wings, is of a shaded blue, and at the inner angle of each wing is an eye-like orange-colored spot with a black center. These butterflies place their eggs — which are conical in form, and of a pale-green color — upon the leaves of carrots, parsnips, parsley, celery, dill, caraway, and some other umbellate plants. From these eggs hatch tiny blackish caterpillars which begin at once to feed upon the plant whereon they find themselves. As they grow, they moult four times, exchanging the first black skin for one striped and dotted with yellow and green. At the end of a month they are full grown, having attained a length of nearly two inches, and a diameter equal to that of a common lead pencil. At this stage they present an elegant appearance, the velvety green surface of the body being adorned with transverse black stripes, in which are set rows of bright yellow dots. When irritated, these larvæ suddenly thrust forth from the anterior edge of the first joint, a pair of soft yellow horns, which emit a nauseous odor, which, as in the case of a familiar small quadruped, seems to be their only means of defense. Similar retractile scent-organs are a characteristic feature of the larvæ of all the swallow-tail butterflies. The "parsley worms," as the larvæ under consideration are somewhat incorrectly termed, make their first appearance during the month of June, and early in July they desert the plants upon which they fed, and seek various concealed situations in which to undergo their first transformation. In preparing for the change, they attach themselves by preference, to a vertical surface. The hooks of the hindmost pair of prolegs are entangled in a little mat of silk previously spun for the purpose, and a strong band of silk is dexterously passed around the anterior part of the body. Supported thus in an upright position, the larva, after a considerable period of rest, shuffles off its skin and appears in the form of an angular chrysalis, of a dull, checkered wood color, upon which some of the organs of the future insect are indistinctly outlined. From this chrysalis the butterfly issues about ten days later. It comes forth in a very limp and flabby state, the wings appearing as mere soft, crumpled little pads. They gradually dry and expand by exposure to the air, until in about an hour from the time the chrysalis shell is ruptured, the lovely perfect insect is ready to launch forth upon its first aërial voyage, in quest of flowers and companions. Early in August a second brood of larvæ may be found upon the plants liable to their attacks. They attain their growth and hibernate in the chrysalis state, the butterflies issuing the following spring. The only effectual remedy for these caterpillars — which are sometimes exceedingly numerous and destructive — is hand-picking as soon as the plants begin to show signs of their ravages.

The second pernicious species of swallow-tail butterflies — the Philenor — closely resembles the Asterias in size and form, but the upper surface is more somber. It may be distinguished from the latter by the absence of the rows of yellow spots on the hind body and wings, and by the more silken or metallic green luster of the latter. The hind wings are marked only by a single row of white spots in addition to the narrow cream-colored edges of the marginal sinuses. The under surface of this pair of wings is extremely gay, being of a brilliant peacock blue, ornamented near the margin with a row of large orange-colored spots set in black, the upper five of which have a white spot at one end. The edge corresponds to the upper surface in the row of lunate cream-colored marks. The larva is of a velvety-brown color, with numerous soft, horn-like tubercles along the back and sides. It feeds, so far as known, exclusively upon the different species of pipe-vine (*Aristolochia*), often entirely defoliating these unique climbers and endangering their existence.

The history of this insect was given in detail in Prof. Riley's second Report on the Entomology of Missouri, and some years subsequently he discovered that this butterfly, contrary to the usual habits of its kind, deposits its eggs in masses, and that the young larvæ are gregarious. Their injuries, therefore, may be easily prevented by searching for and destroying the eggs and young caterpillars early in July.

A second very destructive family of butterflies are the "Garden Whites," or cabbage butterflies. Their ravages are mainly confined to cruciferous plants, such as cabbage, cauliflower, kohl-rabi, turnips, peppergrass, and the like. The perfect insects are only medium-sized, expanding about two inches. Some species are entirely white, others more or less spotted with black and gray. They fly low and rather slowly, and are easily captured. They are very prolific, and at certain seasons of the year the cabbage beds or fields are almost hidden under a white cloud of these delicate flutterers. We have two indigenous species, and one imported which is now naturalized over the greater part of the cultivated area of the country. The "Protodice," or so-called Southern cabbage butterfly (*Pieris protodice*, Boisd.), is the most abundant native species, and occurs throughout the length and breadth of the land. It is characterized by a marked colorational difference between the sexes. The males have only four or five black spots on the upper wings, while the under wings are entirely white. The females, on the contrary, have both pairs of wings so densely spotted with black and gray that they appear checkered.

The first larvæ appear during the latter part of June or early in July. They are cylindrical, blue-green worms, roughened with short, stiff, black hairs; along each side is a broad, purplish or lilacious stripe between two narrower stripes of yellow. When full grown they are rather more than an inch in length. The chrysalis is suspended in the same way as those of the swallow-tail butterflies, and is somewhat similar in form, though much smaller. The color varies considerably, but is usually of a bluish-gray, dotted with black. The butterflies emerge in ten or twelve days. There are at least two distinct broods of Protodice each year, though, owing to the longevity of the perfect insect, it may be found in all stages of development from July to October.

The second indigenous species is limited in its habitat to the Northern

States and British America, seldom extending as far south as Pennsylvania. This is the Potherb or northern cabbage butterfly (*Pieris oleracea*, Boisd.) The wings are entirely white, with a grayish shade at the base and front edge. The body, as in the other species of this genus, is black, clothed in a whitish down. The larva is of the same size and form of the previously described species, its color being plain pale green. The chrysalis also resembles that of the former species.

The European cabbage or rape butterfly (*Pieris rapæ*, Schrank) is one of the most prolific and voracious pests that has as yet crossed the Atlantic. It was first observed in Canada, in the environs of Quebec, from whence it has, within the brief period of a little more than two decades, spread over the greater part of the cultivated area of North America. The butterfly closely resembles the male of our most common native species — the Protodice — but may be distinguished from it by the more distinct black tips to the wings, as well as by the two black spots, and the more or less intense yellow color of the under surfaces. The larva is a velvety-green worm, an inch long when full grown, and differs but slightly from that of the Northern White. The chrysalis is also similar in form and color, but will be found openly suspended in sheds and out-buildings, and upon fences where it is exposed to destruction. The instinct of concealment, during the fixed and helpless state, seems to be in a measure lost by this almost domesticated species. There are several broods during the summer, and it hibernates in the pupa state. In Europe this pest of the garden is kept in check by parasites, some of which have made their appearance in this country, and are already proving valuable allies of the Eastern gardeners in reducing its numbers. This species, as well as the Protodice, feeds upon the majority of cultivated cruciferous plants, and also manifests a singular partiality for mignonette, devouring its fragrant blossoms and tender leaves with great avidity.

The most effectual remedies for the ravages of all these species of cabbage worms are, dusting thickly with lime, or drenching with carbolic soap-suds, or, better still, with hot water, which, if just below the boiling point, will kill the worms without seriously injuring the plants they infest.

The handsome yellow and black *Colias Philodice*, so abundant in this section of the country, breeds almost exclusively on clover — preferably on white clover. Its larva resembles that of *Pieris rapæ*, but is somewhat larger, of a darker green color, and is ornamented with a handsome pink and cream-colored lateral band. It is but seldom that it appears in such numbers as to do any appreciable damage.

Harris asserts that one of the delicate little Thecklas (*T. Humuli*, Harris) proves, in some localities, a serious pest of the hop, its short, thick, downy caterpillars devouring the heads of that valuable vine. Hand-picking is the only remedy.

The remaining species to be considered in this connection belong to the section of the so-called "four-footed" butterflies, from the fact that the first pair of feet or legs are never used in walking, but are in a measure atrophied, and are held closely appressed to the fore part of the thorax. The caterpillars vary greatly in form and color, as do also the chrysalides. The latter are not supported anteriorly by a band, but hang, head downward, from a little mat of silk, in which the hooks at the posterior extremity are attached.

The most destructive species is the large and elegant Antiopa (*Vanessa Antiopa*, Linn.), which, as it is common both to this country and Europe, is in all probability an imported species. It expands about four inches, and is of a rich, purple-brown color, with a broad, buff border to the wings, inside of which is set a row of bright blue spots. The larvæ are black, spiny caterpillars, measuring when full grown nearly one and three-quarters inches in length. They feed on the Lombardy poplar, willow and elm, and frequently occur in such numbers as to entirely defoliate the trees which they infest, and to bend the leafless branches by their weight. Their appearance is so repulsive, owing to their spiny armor, that many people regard them with terror as venomous. This is, however, a groundless fear, for although they do not exactly invite the touch, the spines being prickly, yet they are incapable of inflicting any injury of the nature of a *sting.* There are two annual broods, and hibernation takes place in the perfect state. Trees liable to attack should be carefully watched, and the worms, as soon as they appear, jarred to the ground and destroyed.

Grapta, a closely-allied genus, includes a number of handsome but mischievous butterflies. They are all of velvety, mottled brown colors, and are chiefly characterized by the irregular outline of the wings, and by peculiar silvery or golden punctuation-like marks on the under surface of the hinder pair. The Semicolon butterfly (*Grapta interrogationis*, F.—the Greek interrogation point is identical with our semicolon) is the most common southwestern species. The ground color is orange-brown, variegated with large spots of very dark brown and black, the black color predominating on the under wings, which are provided with a short lobe or tab at the angle of the lower and outer edges. The wings are more or less distinctly bordered with pale blue. The variegated under surface usually inclines to a purplish hue, but is occasionally rust-red, and near the center of the under wings is the silvery or golden dot and curved mark characteristic of its species.

Next in point of numbers and extent of habitat is the Comma butterfly (*Grapta comma*, Harris), which is somewhat smaller and less brilliantly colored than the preceding species, and has the outer edges of the wings even more deeply excavated, giving it an exceedingly ragged outline. The silvery mark on the under surface is in the form of a comma. The larvæ of both these butterflies are spiny caterpillars, but not so formidable in appearance as that of the Antiopa. The larva of the Semicolon butterfly is of a brown color, densely speckled with yellow, with a yellowish stripe along each side. The branching spines are of a dull red and black, while the head is rust-red. The larva of the Comma is quite similar, but lighter in color.

Another species, abundant in the North though but rarely found with us, is the Progne, (*Grapta Progne*, Har.) This has the under surface of the wings black, variegated with yellowish-gray, and ornamented with a silvery L.

The larvæ of all these *Graptas* feed upon the elm and hop, and occasionally upon the linden, which in the New England States is often called the lime, and in the Northwest the basswood. They are most injurious to the hop, frequently ruining the entire crop.

Still another northern species of this group is the White J. butterfly (*Vanessa J. album*, Har.) It is one of the largest species, very richly colored, and may be distinguished by a large white spot between two black ones on the front edge of each wing. The lower wings have on the under side a white character in the shape of the letter J. The larva, I suspect, feeds in part, if not wholly, on the gooseberry.

There are some other butterflies whose larvæ occasionally prove injurious, such as *Papilio Turnus* and *Limenites Ursula* on apple and cherry; *Limenites disippus* on willow and poplar; *Cynthia cardui* on the hollyhock; and the *Senecios* and *Argynnis Myrina* on violets. But the species described include all—so far as the writer is aware—that can with any justice be termed "pernicious." And even these, with a few exceptions, are easily prevented from committing serious depredations on the plants they infest.

INSECTS INJURIOUS AND BENEFICIAL.

BY MRS. O. E. STOUT, SUPERINTENDENT PUBLIC SCHOOLS, HOLTON.

"The universe is God's word writ large," and this writing is seen no less in the tiny insect that crawls at our feet, than in the beautiful flowers that decorate the fields, or in the stars that spangle the heavens above us. But it is not my province to speak of the beauties of insect life, though anyone who admires symmetry in form and harmony in colors can find them in the countless numbers of butterflies and moths that flit about, and in the bright shining beetles that run to some sheltering nook for protection. The subject of entomology has been studied, however, for its practical utility, and great service has already been rendered by those who have pursued the study, but there is still need of much more light than we have. I have often heard it remarked here during the summer season that "there are more bugs [for the term "bugs" is applied to all insect life] in Kansas than anywhere else under the sun," and indeed there is some shadow of truth in the statement. While we know that we are not more injured by insects here than are other places in the same latitude, we must confess that the depredations caused by them would have shorn Kansas of the name she bears as a prolific and fruit-growing State, were it not for the exceeding fertility of the soil which gives life to every germ cast upon it. The gardener says, "There are insects working upon my cabbages, on my melons and squashes and cucumbers, on my potatoes and sweet potatoes. What shall I do?" The florist says, "There are insects destroying my plants and shrubs; my roses are blasted before they come to perfection. How shall I prevent them?" The fruit-grower says, "The borers are injuring my orchard and vineyard. The caterpillars are defoliating my fruit trees and shade trees. What can be done?" And so the question comes up from all directions, How can we arrest this great army of insect workers? With the aids God has given — the birds, the parasitic and beneficial insects — observation and ready work on the part of the husbandman will accomplish wonders in that direction. For God has not only given man dominion over the birds of the air, the beasts of the field, the fishes of the sea, but over every creeping thing that crawleth upon the face of the earth.

In preparing this paper to be read before you, it was my desire to make the few thoughts which I might present of a practical character, and for that purpose I tried to obtain specimens for exhibition. I was unable, however, to get what I desired most, so shall be compelled to give short written descriptions.

The two-striped saperda, as it is called in the perfect state, is a reddish-brown beetle, with a broad, white stripe down each wing cover. It makes its appearance during the months of June and July, when it deposits its eggs generally near the crown of the tree, but sometimes in the forks. In ten or twelve days the grub, which is of a whitish color, with a round, black head, makes its appearance, eats it way through the bark, and begins its three years' journey of destruction. At the end of this time it transforms and eats its way out of the tree. The casual observer may think that since they are so long in coming to maturity they cannot greatly injure the fruit grower. But when it is remembered that several of these borers are sometimes at work in one tree, it will be seen that the tree will be so perforated by their passages as to greatly reduce its vitality. And a tree so injured cannot bear perfect fruit. The saperda is nocturnal in its habits, and is on that account difficult to find. But the borer may be found by the reddish-brown sawdust-like substance which it pushes out of its place of entrance, and may be destroyed by a wire thrust into the hole, or by carefully cutting with a knife. Riley advises soaping the tree to prevent the beetle from depositing its eggs, and when the tree is infested to cut through the bark at the upper end of the boring and pour in hot water.

The flat-headed apple-tree borer is very abundant in eastern Kansas, but is entirely different in appearance and habits from the one just described — indeed, belongs to another family altogether. The beetle is small. The elytra are of a bronze color with two irregular transverse rows of marking across them, dividing them into three equal lengths. The upper side of the abdomen is a beautiful green, and the lower side a coppery color. The grub is not so large as that of the round-headed borer, while the head is flattened and of a reddish-brown color. This beetle also makes its appearance in June, but is diurnal in its habits, basking in the sunshine and depositing its eggs in cracks and crevices on the sunny side of trees. The remedies for this borer are the same as those recommended for the other: soapy washes in June and July, and the probe in August and September. There is another point to consider in the destruction of this borer. It attacks only feeble and debilitated trees. Anything, then, which increases the vitality of the trees, decreases the ravages of this pest. The same may be said of other trees which it infests — the peach, pear, plum, cherry, elm, maple, etc., for its ravages are not confined to the apple alone.

The codling moth or apple-worm is another insect that does great damage to the apple crop of our State. A year ago last summer, while hunting insects for study, I found a tree that dropped all its fruit from the effects of this moth. It appears in April and May, and deposits its eggs in the blossom end of the apple, where it hatches in a few days and eats its way to the core, throwing out its castings after it. It takes three weeks for the larva to mature, when the apple falls to the ground and the worm seeks some favorable crevice to transform. There are insects which are parasitic to the apple-worm, but it increases so rapidly that the orchardist is compelled to use artificial remedies for its destruction. Gathering up the fallen apples, and binding the trees either with paper, hay or old rags, for the larva to spin up in, are remedies frequently used. If bands are used, they should be placed around the tree as early as June, and taken off at intervals of ten or twelve days, for the purpose of destroying the cocoons, and kept up till September. Many of these apple-worms are gathered in the apples which are stored away for winter use, and their cocoons may be found in the cracks of bins and barrels, around the hoops, or in any convenient hiding-place they happen to find, and should always be destroyed before the time of their appearance in spring. The caterpillars of the handmaid moth and the fall web-worm, (*Hyphantria textor,*) a small white moth, are injurious to the foliage of the apple, but they are readily discovered, the former by the leafless condition of the branch upon which they are feeding and the latter by their web. They are also easily destroyed by cutting off the branches where they are found, and crushing them with the foot.

The Ægeriadæ is a family of small, gayly-colored moths, which, in the larva state, are very destructive as borers. Of the genus Ægeria there is one species that attacks the peach and plum, one the pear, one the grape, and one that works upon the canes of blackberries and raspberries.

The peach-tree borer (*Ægeria exitiosa*) is the larva of a slender, dark-blue-colored moth, which appears in July and August and deposits its egg on the trunk of the tree near the ground. The presence of the grub may be detected by its reddish-brown castings mixed with the gummy substance which exudes from its place of entrance.

The remedies for this borer are, banding the tree around the base with sheathing-paper, or banking it with soil to the depth of a foot and pressing it firmly around the trunk before the moth emerges in spring. The wire probe should always be used in case of borers, but if these remedies are not sufficient, the soil should be removed and hot water, almost boiling, poured around the trunk, which will destroy the insect and do no injury to the tree. The pear-tree borer (*Ægeria pyri*) is "purple-black above and golden yellow beneath, with three yellow bands across the abdomen, the middle band being the larger." Wrapping the trunk with sheathing-paper, placing mortar around the roots, and covering the wounded parts with clay, are remedies which I have read.

The moth of the grape-root borer of this genus is described by Harris as being dark brown, tinged with tawny orange on the sides. It flies from the middle of June till the middle of September, and during that time deposits its eggs on the collar of the grape. As soon as the young larva appears it eats its way into the roots, where it lives upon the sap-wood and bark. There is a small, black moth, known as the Alypia, the larva of which works on the grape very much the same as the one just described.

Through the kindness of Prof. Snow I am able to show you an insect called the eight-spotted forester, which he describes as destructive to the Alypia. I am not able to give remedies for these borers, either from any work which I have referred to, or from personal knowledge. For the destruction of the moths, however, since nearly all of them are nocturnal in their habits, and are attracted by light, I should think that little bonfires lighted on summer evenings would be very effective. There are also beetles that prey upon the grape, some of which are borers, and others leaf-eaters. Of these leaf-eating beetles, I have two specimens. The *Pilidnota punctata* is a large, brownish-yellow beetle, easily distinguished by three large black dots on each elytrum. It is found flying during the months of July and August, and is often very injurious. The second, fidia, is a very small beetle, of chestnut-brown color, is very destructive from its habit of cutting the leaves; if numerous, they completely riddle them. Riley states that "they appear in June, and generally disappear in July, from which fact we may infer that there is but one brood each year." Remedy: The vines should be shaken often and as many destroyed as possible.

The raspberry borer is the larva of one of the small moths of the genus ægeria. This moth deposits its egg in the canes of raspberries and blackberries. The larva, which is a yellowish-white, with a dark reddish-brown head, burrows in the root. Only those who have witnessed the effects of these borers can realize how very destructive they are. They attack the young shoots, which would be the bearing canes of the next year, and invariably kill them. The only remedy I have seen is to cut out the infested canes and burn them in the spring before the moth emerges.

The destruction of shade and ornamental trees by caterpillars and borers is of such common occurrence that it is high time the subject be considered, not only by horticulturists, but by every man and woman who takes pride in the surroundings of home. The maple is so infested by borers and caterpillars that it seems as if it would be exterminated unless something be done for its protection. I am not familiar with the borer, though a maple tree with a perfect trunk is rarely seen. But to give you some idea of the propagation of the larvæ which feed upon the leaves, I will state that during the institute last summer (which was in session only four weeks), several of the worms were brought in and deposited in a box prepared for the purpose. During that short period they spun their cocoons, appeared in the perfect state, and deposited eggs several days before the close. You all know the worm, but I presume but few have taken pains to discover the moth, as it is nocturnal in its habits. The male is smaller than the female, and of a pale lemon color, with delicate pink legs and antennæ. The female would expand an inch and a half or two inches, is a beautiful downy white, with pink antennæ and legs. The worms could be easily destroyed on small trees by shaking them off and crushing with the foot.

A few years ago, locust trees were very common here; indeed, so plentiful were they in the western part of town that the very air was fragrant with their perfume during their season of bloom. But I think I am safe in saying that there are not a half-dozen trees in the whole city and suburbs now. They have been destroyed by borers. The hickory is also infested by borers of the same genus, of which I have specimens of beetle. The cottonwood has its destroyers, one family feeding upon its leaves and another boring in its trunk. The box-elder, the elms, Lombardy poplar, and the willows — in fact, almost every tree that grows, has some insect, endowed with a peculiar instinct for its destruction, and the only way to prevent their ravages is to seek them out in their retreats, and gouge them to death with a wire.

There are numerous insects that are injurious to the culture of roses, but I have found that snuff sprinkled over them, or a weak infusion of tobacco poured upon them, is beneficial. Indeed, I have used the latter remedy in case of plant-lice on different flowers with success.

If I should neglect to speak of the beneficial and parasitic insects, I should feel that I had omitted the most interesting, as well as the most important part of the subject. God, in his wisdom and goodness, has created numerous families of insects, giving them a most wonderful instinct for the destruction of their fellows. To the numerous species of ichneumons is allotted by Nature the task of restraining the superabundance of the rest of the insect world. These insects are small and wasp-like in appearance, and are provided with long, slender ovipositors with which they can pierce the egg, larva, or pupa of other insects. It is a curious instinct which leads them thus to provide for their young. The pimpla and long-sting are parasites of the apple-worm. The tachina-fly, though some larger, very much resembles the common house-fly, and like the ichneumon, is a parasite of the canker-worm and other caterpillars. Among the beetles, there are many that prey upon their fellows — real cannibals by nature. Most of the ground beetles are predaceous, burrowing in the ground, where they lie in wait for their prey.

The ladybirds are parasitic on plant-lice. They are generally well known, their characteristic form being hemispherical; color, red or yellow; and wing covers marked with little round black dots.

The praying mantis receives its name from the devotional attitude which it assumes when watching for its prey. The body of the young mantis is long and slender, and turned up at each end. It catches caterpillars and other insects with its stout fore-legs, and holding them firmly, sucks their blood at leisure. The eggs of these curious insects are no less curious. The first cluster I saw reminded me of a lady's coiffure, so regularly was it platted. Indeed, one would never recognize a germ of life in so curious a little bundle. These egg-clusters are about an inch in length, and of a sober brown color, found glued to the branches of trees.

I have mentioned only a few of the many insects that are already known to be beneficial, but time and study will, I doubt not, reveal still more wonderful things in God's economy of nature. The question in the minds of the horticulturists of the State is, and should continue to be, what insects are beneficial, and how shall we protect them? What insects injurious, and how destroy? But for general diffusion, the subject of entomology has not yet received the attention that it should in an agricultural State like ours. The fact that almost every child crushes the caterpillar, and admires and protects the butterfly, the mother of all caterpillars, is sufficient proof that the elements of the subject, at least, should be taught in our public schools.

Adjourned.

WEDNESDAY AFTERNOON.

The President called the meeting to order.

COMMITTEE ON TABLE FRUITS.

The President announced the following committee on Table Fruits: Messrs. E. J. Holman, Prof. E. A. Popenoe, Abner Allen.

The report of the Committee on Credentials was made, and on motion adopted.

SECRETARY'S ANNUAL REPORT.

Mr. President, and Members of the State Horticultural Society: At this, the close of our thirteenth year of organized work, as is customary, I present to you a summary of the work that has been done through this office, and by our co-laborers, in the interest of Kansas horticulture.

BOARD MEETING.

A meeting of the Board was held December 5th, 1878, at the close of the twelfth annual session, in the parlor of the Hamblin Hotel, at Ottawa, and the following business transacted:

The chairs of the standing committees were filled as follows, for the year 1879:

On Nomenclature—Dr. Wm. M. Howsley, Leavenworth.

On Botany and Vegetable Physiology—J. W. Robson, Cheever.

On Entomology—Prof. F. H. Snow, Lawrence.

On Orchard Culture—F. Wellhouse, Leavenworth.

On Forestry—J. B. Schlichter, Sterling.

On Small Fruit Culture—J. W. Latimer, Pleasanton.

On Floriculture—G. Y. Johnson, Lawrence.

On Vegetable Gardening—Wm. Cutter, Junction City.

On Handling Fruit—D. G. Watt, Lawrence.

On Meteorology—Prof. F. Hawn, Leavenworth.

On Vine Culture—W. E. Barnes, Vinland.

Committee on Needed Legislation—Col. G. M. Waugh, Gardner; Capt. E. P. Deihl, Olathe; C. H. Graham, Leroy.

The Secretary was instructed to obtain the estimates of the leading publishing houses in the State and Kansas City, on the work of printing and binding Vol. VIII—proceedings of this Society during the year 1878—and to increase the number of the edition to 2,500 copies, if an appropriation should be made by the State Legislature to meet the expenses. Also, to call the ninth semi-annual meeting at some point favorable in the Arkansas valley, provided the A. T. & S. F. Railroad Company should offer satisfactory inducements by a reduction in fare, to justify it.

Meeting adjourned.

Your Committee on Needed Legislation, assisted by extensive memorials from may counties, secured the passage of the following law:

LAW OF 1879.

Be it enacted by the Legislature of the State of Kansas:

SECTION 1. That the sum of two thousand five hundred dollars for the fiscal year ending June 30, A. D. 1880, and the further sum of two thousand five hundred dollars for the fiscal year ending June 30, A. D. 1881, are hereby appropriated to the Kansas State Horticultural Society, out of any funds not otherwise appropriated.

. . . .

SEC. 3. That the Secretary of the Kansas State Horticultural Society shall hereafter annually make out and publish two thousand five hundred copies of the Proceedings of the said Society for public distribution.

Approved March 10, 1879.

The items upon which this law was based, were: $1,250 for the publishing of the Society's annual report; $500 for Secretary's salary; $200 for experimental work; $100 for furniture, Secretary's office; and balance for contingent expenses.

The promptness and unanimity of the Legislature in conceding the justice and merit of the claims of this Society were very marked, as well as highly gratifying, and for the first time since its organization for the promotion of horticulture in Kansas, be it known to the people of Kansas that the Executive of this great commonwealth, recognizing the importance of our work, and its claims to the fostering care of the State, transmitted the following

SPECIAL MESSAGE

to the Legislature:

To the Legislature: I desire to bring to your notice the subject of Horticulture, which I had intended to have presented in my biennial message, but by accident it was omitted.

The "Kansas State Horticultural Society" was incorporated on the 15th day of December, 1869, since which time the Society has held semi-annual meetings in various portions of the State, and published annually a full report of its proceedings. The last report, being for the year 1877, I herewith transmit for your consideration.

The meetings of this Society have been held without material aid from the State, for the very laudable purpose of disseminating knowledge upon the subject of horticulture among the citizens of our State.

It is a matter of which we have reason to be proud, that through the labors of this Society Kansas has been placed at the head of the fruit-growing States of the Union. In view of the fact that the work of this Society is for the benefit of Kansas, and that the horticultural interests through its efforts have grown to great magnitude, and that it is not just to expect the members of this Society to continue this work at their own individual expense, I respectfully suggest that the State cannot afford to neglect this interest, or withhold its fostering care, and therefore earnestly recommend that a sufficient appropriation be made for printing and distributing the reports of the Society, and to defray its incidental expenses, for the fiscal years ending June 30th, 1880, and June 30th, 1881.

JOHN P. ST. JOHN.

EXECUTIVE DEPARTMENT,
TOPEKA, KANSAS, February 11, 1879.

To the committee securing such an expression from the Governor, and such results from the Legislature, are due the most grateful expressions of this Society, which should be given in due form. And to the people of this State who so promptly assisted our committee with numerous memorials, filled with the names of tax-paying communities, we are deeply indebted.

In view of this manifest confidence in this Society, and the great work it has undertaken, the grave question forces itself upon our most earnest consideration, what shall be the measure of the returns we shall make? Truly, great are the responsibilities resting upon the members of the Kansas State Horticultural Society. Our position as State authority increases the measure of this responsibility. To-day the people of this State are anxiously watching this convention of experienced horticulturists, to obtain from its proceedings a knowledge of the pursuit they have entered into, and in which they have invested their capital, which shall enable them to secure the coveted results—a knowledge that will enable them to solve some of the difficulties they encounter, and remove the obstacles hindering their success.

The relations this Society sustains to the people demand the most earnest thought and careful management in all its deliberations and affairs. We should not, nor can we disappoint them. Their expectations must be met.

Then look carefully to the work before you, fully impressed with the important relations under which you have met at this time.

THE NINTH SEMI-ANNUAL MEETING.

Having failed to obtain satisfactory inducements to call that meeting at some point in the Arkansas valley, an invitation from the Northwestern Horticultural Society was accepted by the board, and the Society assembled at Beloit on June 17, 18 and 19, 1879.

The meeting was a pleasant one, and its results quite satisfactory, considering the newness of that portion of the State. We found many evidences for encouragement to the horticulturists of the Northwest, and many persons intelligently and persistently engaged in horticultural work. We also found there the foot-prints of the unscrupulous tree-peddler, who had gulled the ignorant and unsuspecting with Russian apples, blood-leafed and Lombardy peach, tree roses, tree currants, tree strawberries, sweet rhubarb, and that exploded humbug, the Conover's seedling grape, first brought to notice in this State by N. H. Albaugh, of Hill Home Nurseries, Tadmor, Ohio. Numerous complaints of this class of swindlers have been made to this office during the past year, (showing that this State is being overrun with them,) and urging that this Society take some action to more generally post the settlers with a knowledge as to the unreliability of such men, and to publicly censure such nurseries as privately wink at such work.

BOARD MEETING.

The second meeting of the Board was held at Beloit, following the adjournment of the ninth semi-annual meeting. At this meeting the experimental work was allotted as follows:

Committee in charge of Native Flora—Geo. Y. Johnson, Lawrence.
Cultivated Flora—J. W. Robson, Cheever.
Peaches and Plums—H. E. Van Deman, Geneva.
Apples and Pears.—F. Wellhouse, Leavenworth.
Small Fruits (excepting strawberries)—Prof. E. Gale, Manhattan.
Cherries and Strawberries—G. C. Brackett—Lawrence.
Vegetables—Wm. Cutter, Junction City.

The following, with the foregoing list of committees, was duly published, and copies sent to most of the County Vice-Presidents:

> "It is the desire of the Society that persons having promising seedlings of any class of fruits, or knowing of any such, will send or cause to be sent by express, at the expense of the Society, three or more specimens of each, to the proper committees as above designated; and of such as the committee shall consider promising, cions and cuttings, or young plants or seeds, as their nature requires, for propagation will be asked in their proper seasons. This work is an important one, affecting materially the future success of horticultural pursuits in Kansas, and is in full accord with the efforts of wide-awake horticultural societies throughout the United States, and meets the hearty coöperation of all liberal and enthusiastic horticulturists."

THE PROPOSED NATIONAL AGRICULTURAL SOCIETY.

The following circular with reference to that organization has been received, and by urgent letters from the Executive Committee this Society has been solicited to assist in its organization:

OFFICE OF THE COMMITTEE ON ORGANIZATION
OF A NATIONAL AGRICULTURAL SOCIETY,
323 PEARL STREET, NEW YORK, Nov. 20, 1879.

J. H. REALL, Chairman,
L. S. HARDIN, Sec'y,
LAWSON VALENTINE, Treas.,
HENRY E. ALVORD,
WM. CROZIER,
Executive Committee.

DEAR SIR: It has been determined to organize a National Agricultural Society for the protection and advancement of American agriculture, and you are cordially invited to attend a meeting in this city, at the Metropolitan Hotel, New York, Wednesday, December 10, 1879, at 10 o'clock A. M., for the purpose of perfecting an organization.

An association is designed that shall embrace every agricultural interest, and represent every section of the country, and that shall, by practical methods, accomplish the objects stated.

It is intended to make the expense of membership so light, and the advantages of the Association so great, that every farmer and every person interested in the soil may become a member and participate in its advantages.

The movement is meeting with unexpected favor; letters of approval are being received from all sections of the country, and the committee have reason to believe that the hopes of the most sanguine will be more than realized in the result of the undertaking.

This meeting promises to be the largest and most important gathering of representative men connected with agriculture that has ever been held in this country, and we hope that you will help to swell the number, and assist in what is believed to be an enterprise without parallel in greatness and usefulness.

At this meeting a constitution and by-laws for the government of the Association will be adopted, and officers elected to carry out its objects. It is believed that the session will last at least three days. Lectures and addresses on practical topics will be delivered by Hon. Cassius M. Clay, of Ky., Prof. E. W. Stewart, Hon. Geo. B. Loring, Francis D. Moulton, Esq., Prof. Manly Miles, Prof. X. A. Willard, Prof. C. V. Riley, Dr. John A. Warder, Prof. W. H. Brewer, Hon. Victor E. Piolette, Prof. Morse, A. W. Dickenson, Willis P. Hazard, Albert R. Ledoux, A. M., Ph. D., and others. As the International Dairy Fair will be in operation during the week of this meeting, an additional attraction is offered to those who may attend.

Will you please reply at your earliest convenience, to the Chairman of this Committee, stating whether or not you will be present at the meeting, and if we may expect your coöperation?

Will you kindly send us the names of those interested in agricultural matters in your section, as far as it is convenient for you to do so?

The Committee will be obliged for your views and suggestions.

The following circular has been received from the United States Board of Trade:

DEAR SIR: I am directed by the Executive Committee of the United States Board of Trade to ask you to present this communication, with accompanying documents, to your organization.

The United States Board of Trade has been organized solely for the consideration of subjects of national importance. It is, in consequence, in no sense in antagonism with any local Chamber of Commerce, Board of Trade, Manufacturing, Agricultural, Mining, or Industrial Association of any kind. On the contrary, it aspires to be in harmony and fellowship with them all, and to afford them, from time to time, a convenient channel for the expression of an authoritative and influential opinion upon questions of interest to every citizen.

That some such national organization, simple and inexpensive in its machinery, as this will be found to be, is to be desired, must be apparent to every thinking business man.

In union there is strength. To accomplish the best results for such widely varied interests as this country presents, organization is absolutely necessary. Other interests, conflicting with what is believed to be for the highest welfare of this country, are organizing. Is it not time that the best elements of society everywhere should use the same methods for successfully meeting and counteracting adverse influences?

The United States Board of Trade desires to place itself in harmonious relations with all other organizations that have similar aspirations, and it respectfully asks that your association will enter into such relations with it.

With much respect, I have the honor to be your obedient servant,

W. H. C. PRICE,
Secretary U. S. Board of Trade.

NEW COUNTY ORGANIZATIONS.

Since the last annual meeting, the following County Horticultural Societies have been organized:

Butler County Horticultural Society.—Secretary, E. R. Powell, Augusta.
Crawford County Horticultural Society.—Secretary, G. W. Mosteller, Girard.
Miami County Horticultural Society.—Secretary, E. W. Robinson, Paola.
Doniphan County Horticultural Society.—Secretary, S. Hatch, Wathena.
Cowley County Horticultural Society.—Secretary, J. P. Short, Winfield.
Republic County Horticultural Society.—Secretary, W. P. Peak, Belleville.

Total number of horticultural societies in the State at this date, 31, viz.: Three district, twenty-six county, and two local.

The Cowley County Society has extended to this Society a pressing invitation to hold the tenth semi-annual meeting at Winfield, in June next.

AD-INTERIM COMMITTEE.

The question of the importance of such a committee, properly organized for efficient work, is worthy of the consideration of this Society. County societies are annually forming for the purpose of uniting the experiences of those within their limits engaged in the pursuit of horticulture, and of obtaining from all sources knowledge of a sound practical nature. We of the State Society can testify to the advantages derived from an outside attendance on several occasions, at our meetings; we even seek it, and I believe every member has felt well paid by the results. So it is with those county societies: the attendance at their meetings only once in a year, of even one of our members having experience, will impart new interest, stimulate the zeal of their members, and encourage their faith. The interest of this State, and the increasing desire among the people for knowledge, demand of this Society more intimate relations, and in no more effectual way can the people be reached than through the meetings of the county societies. Such services promptly rendered in response to the invitations of the people, cannot fail to meet with public approval.

There is no easier or surer method of securing the public confidence for our work than through a thorough canvass of the counties by a live committee. The work of an *ad-interim* committee, properly managed, would secure to this Society an amount of reliable information with reference to the conditions of our State, in a single year, that could not be obtained by years of labor, in any other way. This Society, as a State institution, should be made fully acquainted at all times with the conditions of the horticultural interests within the State, and through the efforts of an *ad-interim* committee, and the aid of a thoroughly-organized State by counties, it can be. And to that purpose must we exert ourselves, to retain the confidence and support of the intelligent classes of community.

EDUCATION.

At the twelfth annual meeting, the following resolution was unanimously adopted:

RESOLUTION No. 1.—"*Resolved*, That the Executive Board of this Society be constituted a committee, to confer at an early day with the State Superintendent of Public Instruction, for the purpose of securing his recommendation to the establishing in our State University and high schools, a special department for instruction in horticulture, and the introduction in the common schools of a course of elementary instructions in the same interest; and further, to secure the setting apart of a specified day in each year to be devoted to the planting and culture of shade and ornamental trees and shrubs in the school-house grounds throughout the State. That the Secretary of this Society be instructed to furnish the Governor-elect and State Superintendent with a copy of the foregoing, with the request that it receive their consideration, and notice in their respective message and report to the next Legislature."

In compliance with the above instructions, a copy was forwarded to the Governor-elect and also to the State Superintendent of Public Instruction.

Referring to the annual report of the State Superintendent of Public Instruction, 1879, I find the following—(p. 46):

"IMPROVEMENT OF SCHOOL GROUNDS.—Attention has been called to this question by the following resolutions. The first was the report of the Committee on Education at the twelfth meeting of the State Historical Society at Ottawa, December 3d, 4th, and 5th, 1877."

[Resolution 1st is the one just given above, being the action of this Society at Ottawa, 1878, instead of 1877, as stated. I have been informed by the State Superintendent in person, that resolution No. 1 was erroneously accredited to the Historical Society, being the one furnished him by your Secretary.]

RESOLUTION No. 2.—"*Whereas*, Many of our beautiful Kansas school-houses are unfenced and unadorned by shade trees; and whereas, the State Horticultural Society has called attention to this: therefore, be it

"*Resolved*, That we recommend the county superintendents to appoint '*Arbor Days*,' and encourage in every manner possible the planting of trees, and the ornamentation of school grounds."

The State Superintendent then adds:

> "Should the suggestion given above be followed, a few years hence the appearance of our school grounds will be much improved, and their value greatly increased. I heartily second the suggestion, with the hope that prompt action will be taken."

This indorsement of our action is quite satisfactory as far as it reaches the resolution, and thanks should be rendered. But the State Superintendent remains silent upon the most important portion of the resolution, viz.: "the introduction of an elementary course of instructions in horticulture into our common schools, and a special department in the same interest in our high schools and State University."

It is to be hoped that during this meeting the readoption of the resolution in question, or one similar thereto, will meet with so strong an expression from this body as to open the eyes of those having in charge the educational matters of this State, to the fact that the people are in earnest in this matter, and that while their money supports the work of education their rights to direct its uses are to be heeded.

VOL. VIII—REPORT FOR 1878.

The publication of this volume was awarded by the Board to Geo. W. Martin, State Printer, as follows: 2,500 copies of 339 pages, at a cost of $1,310, or about 52 cents per copy. As in my previous annual report, I desire to press the request that a copy of this report be placed in the hands of a competent committee, who shall pass upon it in a careful examination, and report by suggestions as to the make-up of Vol. IX, Report for 1879. In the past reports there are repetitions which existing conditions seemed to justify, but which under the present status of knowledge among the people are not required for our future reports. If we are the instructors of the people, as we have assumed to be, and have made proper progress in the work, should not these reports contain instructions in a higher course, leaving the elementary with the volumes of the past?

No copies of Volume VIII have been sent out of the State, excepting in exchange for reports of a similar character, and from the Department of Agriculture, Census Bureau, National Library, U. S. Board of Trade, and Secretary of the American Agricultural Association, New York. All these were sought by application. For the first time since our organization the significant fact has occurred: that of public school teachers applying for copies, and endeavoring to secure a complete set, claiming in support of their demands, that in the near future a knowledge of at least elementary horticulture will be required as one of the qualifications of a competent teacher.

There is another matter to which I desire to call your attention. The interest in horticulture in this State is rapidly strengthening, and extending into every rural home, and with this condition comes an earnest desire for a knowledge requisite to success. Where can it be obtained? Not in any of our Kansas journals; therefore it is sought in the columns of those published in other States, devoted wholly or in part to that interest. From such sources, a knowledge is obtained of methods and practice not at all adapted to our peculiar soil and climate. Disappointment and discouragement follow, and the seeker of truth is adrift upon the sea of doubt and trouble. If he seeks relief from the columns of home papers, he finds only clippings from those published abroad, and oftentimes they appear without credit, from which the conclusion follows that they are from the experience of people in our own State; and in their application, failure is the result. Is not this a lamentable condition, reflecting severely upon the intelligence of Kansas men? In view of these facts, I would press upon your consideration the selection of some journal having an extensive circulation, and known throughout the State to be devoted to the interests of Kansas horticulture, and through the columns of which, the thirst of our people for such horticultural knowledge as is required in Kansas can be satisfied, and thereby stop its being fed from sources without with unwholesome food. Through such a medium, the education of the inexperienced masses in the State, as to the adaptation and non-adaptation of varieties of fruits, and successful methods of culture, can be effected. To those who may oppose such a concentrated effort, I desire to say, do your duty in this work of education through the columns of your local newspapers. Publish to the people your experiences on every occasion presented. You owe it to the press, whose generous hearts will ever open their columns to you, and to the people, as philanthropists and horticulturists, true to yourselves and the public good.

ANNUAL MEMBERSHIP DUE TO THE COUNTY VICE-PRESIDENTS.

To that class of our citizens who have so faithfully served the interests of this Society, I suggest be extended all the privileges of an ANNUAL MEMBERSHIP for each year of such service, as a tribute of gratitude for valuable work in the public interest.

FINANCIAL.

Statement of Receipts and Disbursements from December 3, 1878, to December 16, 1879.

RECEIPTS.

Dec. 6, 1878—Of Treasurer	$3 00
Dec. 6, 1878—Abner Allen, second installment life fee	2 50
Dec. 31, 1878—Of Treasurer	9 43
Jan. 31, 1879— “	6 23
Feb. 28, 1879— “	10 93
Mar. 30, 1879— “	10 57
Apr. 30, 1879— “	13 59
May 31, 1879— “	4 27
June 9, 1879—A. H. Buckman, Topeka, annual fee	1 00

June 21, 1879—Of Treasurer	$6 00
June 30, 1879— “	10 95
July 31, 1879— “	98 37
Aug. 30, 1879— “	8 27
Sept. 30, 1879— “	4 74
Oct. 30, 1879— “	5 97
Nov. 29, 1879— “	11 31
Dec. 16, 1879— “	7 05
Dec 16, 1879— “ salary	500 00
Total receipts	$714 18

DISBURSEMENTS.

Stationery	$13 45
Postage	76 74
Expressage	12 30
Traveling expenses	10 35
Telegrams	3 25
Office furniture	63 95
Freights	20 17

Experimental work	$8 00
Lights, fuel, etc., of office	15 00
Dec. 3, 1878—Balance statement for 1878	6 10
Dec. 3, 1878—Bills allowed	83 00
Dec. 16, 1879—Secretary's salary	500 00
Total disbursements	$812 31

Balance due Secretary's office December 16, 1879 .... 98 18

Referred to Committee on Resolutions.

TREASURER'S ANNUAL REPORT.

Treasurer's Annual Statement from December 3, 1878, to December 16, 1879.

RECEIPTS.

Dec. 3, 1878—Balance in treasury	$4 98
Dec. 6, 1878—Twelve membership fees for 1879	12 00
Dec. 27, 1878—W. E. Fosnot, Ellsworth, balance of life fee	7 50
Jan. 3, 1879—Ashby Chase, Cawker City, annual fee	1 00
Mar. 11—Dr. G. Bohrer, Raymond, annual fee	1 00
Mar. 15—Loan at Merchant Bank, Lawrence	176 00
Mar. 29—M. A. Ralph, Wichita, annual fee	1 00
Mar. 29—Isaac Detheridge, Fame, annual fee	1 00
Apr. 4—Loan at National Bank, Lawrence	96 00
Apr. 8—J. R. Noyes, Lincoln, Neb., annual fee	1 00
May 5—C. C. Chevalier, Garfield, annual fee	1 00
May 27—Loan at National Bank, Lawrence	98 45
June 2—L. Bishop, Osawatomie, annual fee	1 00
June 2—Thos. Buckman, Topeka, annual fee	1 00
June 17—Seven membership fees at ninth semi-annual meeting	7 00
June 28—E. T. Byram, Jewell City, annual fee	1 00
June 30—J. S. Zuri, Pride post office, annual fee	1 00
July 10—State appropriation	2,500 00
July 25—H. W. Smith, Exeter, annual fee	1 00
Nov. 5—Six annual fees by C. G. Wickersham, for Joshua Hill, Wm. Meixell, Aug. Wilson, V. Y. Knapp, Y. Y. Peirson, Merritt Noyes, Parsons	6 00
Total receipts	$2,918 93

DISBURSEMENTS.

Dec. 6, 1878—To Secretary	$3 00
Dec. 30, 1878—Monthly expenses—Secretary's office	9 43
Jan. 31, 1879— " " "	6 23
Feb. 28— " " "	10 97
Mar. 31— " " "	10 57
Apr. 5—G. M. Waugh, committee expense bill	20 00
Apr. 30—Monthly expenses Secretary's office	13 59
May 17—Expense bill, President's office	8 60
May 31—Monthly expenses, Secretary's office	4 27
June 21—To Secretary	6 00
June 30—Monthly expenses, Secretary's office	10 75
July 10—G. W. Martin, printing and binding of Vol. VIII, job-printing bills, etc	1,502 00
July 10—E. P. Deihl, committee expense bill	15 00
July 10—Merchants' Bank, Lawrence, on loan (March 15, 1879)	176 00
July 10—Merchants' Bank, Lawrence, interest on loan	7 00
July 10—National Bank, Lawrence, on loan (April 1, 1879)	96 90
July 10—National Bank, Lawrence, interest on loan	3 10
July 10—National Bank, Lawrence, on loan (May 27, 1879)	98 45
July 10—National Bank, Lawrence, interest on loan	1 55
July 10—G. Y. Johnson, expense bill	8 35
July 10—G. M. Waugh, balance expense bill (April 5, 1879)	4 50
July 14—H. E. Van Deman, Trustee, expense bill	16 35
July 21—E. P. Deihl, balance expense bill (July 10, 1879)	5 00
July 31—Bailey & Smith, bill furniture for Secretary's office	50 00
July 31—Monthly expenses, Secretary's office	38 45
Aug. 19—H. E. Van Deman, experimental work	3 00
Aug. 26—Prof. F. Hawn, postage, as committee	1 50
Aug. 26—Prof. C. V. Riley, bill insect cuts, for Vol. VIII	50 00
Aug. 30—Monthly expenses, Secretary's office	8 27
Sept. 25—C. H. Graham, committee expense bill	23 00
Sept. 30—Monthly expenses, Secretary's office	4 74
Oct. 31— " " " "	5 97
Nov. 29— " " " "	11 31
Dec. 16— " " " "	7 05
Secretary's salary for 1879	500 00
Treasurer's office expenses	5 70
Total disbursements	$2,746 60
Balance in treasury, Dec. 16, 1879	162 33

F. WELLHOUSE, *Treasurer.*

Referred to Auditing Committee.

ELECTION OF OFFICERS.

The annual election of officers for 1880 resulted as follows:

President—Prof. E. Gale, Manhattan.

Vice President—G. Y. Johnson, Lawrence.

Secretary—G. C. Brackett, Lawrence.

Treasurer—F. Wellhouse, Fairmount.

Trustees—M. B. Neuman, Wyandotte; H. E. Van Deman, Geneva; J. W. Robson, Cheever.

The President announced that the next exercise on the program was a paper on insects, by N. P. Deming, of Lawrence.

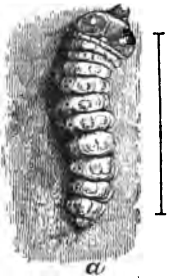
INSECTS AND BIRDS BENEFICIAL AND INJURIOUS TO HORTICULTURE.

BY N. P. DEMING.

Mr. President: In treating this subject as I reach each insect, I will exhibit a specimen by pinning it to the wall before you. First, is the

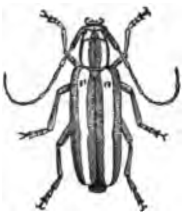
ROUND-HEADED APPLE-TREE BORER.

(*Saperda bivittata.*)



a
Larva.

b
Pupa.



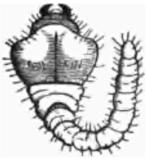
c
Beetle.

Here is a specimen captured in my orchard, which I will pin to the wall. It has been quite numerous in some parts of Douglas county, and been very damaging, particularly to the negligent orchardist. This year the worm has worked on that part of the tree just below the surface of the ground more than usual. I find it easier to clear trees of this borer by examining them in May and late in October, than as many do by making only an examination in the fall. We could soon rid our orchards of this pest if all the fruit growers would act in concert; but while a few careless men allow their orchards to become a breeding-place, the careful and industrious man finds it a difficult undertaking to even save his trees. There must be a concert of action for the destruction of all injurious insects, or serious disasters must overtake the pursuit of fruit growing.

THE COTTONWOOD-TREE BORER.

I also have a specimen, and he goes with the others to the wall. Its oviposition occurs in June and July. The worm lives in the tree until the third year, and then transforms to a large beetle, and comes from its burrow during the latter part of April or fore part of May. The eggs are placed in the body, and high up among the limbs, and where numerous, cause the tops to break off.

THE FLAT-HEADED APPLE-TREE BORER.


Worm or larva.

Beetle.

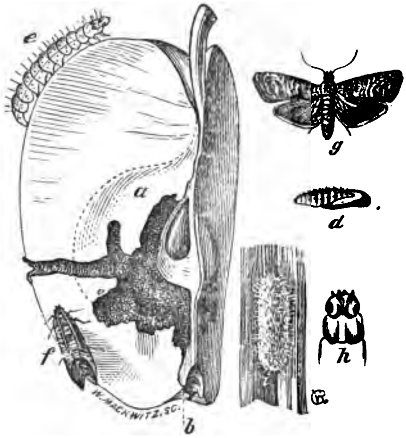
This specimen of the insect I will add to his neighbor, already pinned up. I have never found it doing any damage in healthy trees. A healthy flow of sap drowns the worm; it thrives only in trees debilitated by continued drouth, sun-scald, or other injuring causes—therefore, the most effectual means of protection is to keep the tree in a vigorous condition.

TREE CRICKET.

I have also a specimen which I will send to the wall, in manner as all such rascals should be. This insect is very numerous in my county, and very damaging some years. For its attacks it seems to prefer the largest and finest specimens of fruit. The eggs are deposited in grape-vines, canes of the blackberry and raspberry, and the current year's growth of orchard trees. And all such infested wood should be taken off and burned, during winter-time.

THE CODLING MOTH, OR APPLE-WORM.

(*Carpocapsa pomenella.*)



e, Larva; *i*, Cocoon; *d*, Chrysalis; *f*, Moth; *g*, Moth, with wings expanded.

I send a specimen to the wall as an exposure of one of the most damaging of insects to our apple crops. The Kansas Horticultural Report for 1878 gives the best methods of checking the increase, and means of destroying it. It will require a constant and united effort of all orchardists, to save the fruit of our State from such a deplorable condition as prevails in the more eastern States.

The worst enemy of the fruit grower is the *careless* and *don't care* man. [Calls—"Pin *him* to the wall, too!"] As I did not bring one with me, and there are none here in my delegation, and I hope there are none in this audience, I cannot make so public an exposure as I would like to.

REMEDIES FOR OUR INSECT TROUBLES.

I find the birds render the most efficient natural help. I am satisfied that the king-bird destroys the tree cricket. The Guinea woodpecker, bluebird, and the little phebe, are always busy workers for our protection, as well as a host of others. All species of insectivorous birds should receive all the encouragement which man can give them. Build places for coverts and nesting, and they will stay with you—only go to come back. "God helps those who help themselves." Woe betide the man who is caught destroying any of them on my farm. There are a few birds which are doubtful in their friendliness to our interest, viz., cat-bird and thrush. These are voracious eaters of small fruits, and their utility is questionable. I have concluded to enter the verdict of "*a nuisance*" against them, and demand an abatement.

In conclusion, I regret to find some of our nurserymen are so mercenary in character as to denounce the effort of this and other organizations to enlighten the people upon the subject of entomology as an injury to the fruit interests of our State—claiming that many will be discouraged, and will not plant because of the effort required to protect from the insect ravages. Now, while we encourage efforts in the pursuit of horticulture, and attempt to teach the proper methods how to succeed, which I hold is a noble and generous work, is it not our duty to furnish such information as is required for the protection of such industry? Certainly. And furthermore, should not the nurseryman also enlighten his customers, through whom he makes his living, upon matters so important to his success?

DISCUSSION ON BIRDS.

C. W. Murtfeldt defended the birds.

Prof. E. A. Popenoe, (Agricultural College:) I thank Mr. Deming for his allusion to those destructive birds. There is another one which has proven itself injurious to the interests of the horticulturists—the quail; and as a delegate of the Manhattan Horticultural Society, I have come here instructed to secure an action of this Society, recommending an amendment to the existing bird law by the next Legislature, so that the fruit grower would have the right to kill this bird whenever found injuring his crops. I have heard the complaint made that the quail had been quite destructive to grape crops. I believe the feeling of kindness indulged in by too many for birds is purely sentimental. I am confident that the English sparrow is greatly overestimated in its usefulness, and should be destroyed, as it drives our native birds from their old haunts, being so pugnacious and quarrelsome. It is proving to be a destroyer of *grain*, rather than of insects.

E. A. COLEMAN: Woe be to the man who dares to shoot a quail upon my farm. I always enjoy witnessing the birds eating grapes and berries.

J. W. ROBSON: I think Mr. Deming has gone outside of his subject, in making such an attack upon the cat-bird and thrush. If he had been aware that the "attorney for the birds" (such I was called in Illinois) was present at this meeting, he would have been more careful in making his charges against some of our best friends; and I am surprised and grieved at the position assumed by Prof. Popenoe, in reference to one of the most harmless and efficient insect destroyers. Why, a brace of quails have raised three coveys in my little vineyard, and, to the best of my knowledge, I have not lost a berry. We hire help at from $150 to $200 a year, and pay with pleasure for such service: now is it not mean and sordid to deny the birds their wages, by refusing them their share of the fruit which they have worked faithfully during six or eight months to protect, by destroying such insects as threaten the life of the tree or plant which produces it? I am decidedly opposed to any tinkering of the law protecting birds, unless it be to make it more rigid; but I am in favor of memorializing the Legislature to pass a law making stealing of fruit a criminal offense, for every neighborhood is infested with a class of bipeds who do more serious injury to the fruit grower than the birds have ever done or can do. Previous to coming to Kansas, I had devoted over twenty years of my life to raising fruit, and during that time I never took the life of a bird, or permitted any one to do so on my farm. I encouraged their increase by every means practicable. The result was, plenty of small fruits every year, and very little wormy fruit. We cannot safely interfere with Nature's laws, and thereby disturb the balance she has provided, without suffering.—I hope Prof. Popenoe will not repeat his charges against the English sparrow merely because some great and erudite professor has said so, for he frankly admits that such charges are not based upon his personal knowledge of the bird. I have known this bird from childhood—have seen them in such immense flocks as to darken the sun, and yet no one complained of them. It is purely an insectivorous bird, and only resorts to seeds and grains when the insect season has passed. Mr. President, in closing, I would say, that in my opinion, the man who would advocate the ruthless slaughtering of our feathered friends should be branded as a dangerous member of a community.

E. A. COLEMAN: We have, lo! these many years, been fighting for a protective bird law, and all of us can testify to the persistent efforts arrayed to defeat us. Our State Legislature wisely gave us nearly what we asked, and I thank them for it. I do not consider that it fully covers the ground, yet I am thankful for what was given us; and now men come to this meeting and ask us to aid in a "*go-back*" on the law, by a modification which surrenders what we have gained. *No, sir,* I say. I would rather work to make the law more stringent, and to promptly enforce it. True, birds will eat fruit, and I honor their judgment in taste. Let them have it. They work hard to protect it against bugs, and they should enjoy the eating of some of it. It is a small kind of a man who would grudge the little they eat. If such men would plant fruit trees and plants as they should, there would be a plenty for him and them, and his neighbors. I allow no class of birds to be killed on my place excepting the hawk and crow, and it will not be safe for anyone to try it.

C. W. MURTFELDT: I desire to impress this Society with the great advantages of object illustrations of entomology, and the importance of such sciences being taught in your schools. Ignorance is our strongest enemy in the combat for truth.

ABNER ALLEN: The wasp family has done more injury to my grapes than all other agencies.

C. W. MURTFELDT: Wasps do not damage grapes until some other agency commences the work. They are secondary in their work on the grape.

PROF. E. A. POPENOE: I concur with Mr. Murtfeldt's remarks with reference to the wasp family. The best authority denounces the English sparrow as an unmitigated pest. It drives friendly birds away. I have never observed it eat bugs or fruit.

DR. D. W. HAVENS: About thirty years ago the beautiful shade trees for which New Haven, Conn., became noted, were denuded by the geometers. The English sparrow was introduced among them, and saved those magnificent trees to the city. A similar condition prevailed in the city of New York, and they were the saving agents for that city. Soon after the insect hosts were abated in their ravaging, a crusade was waged against their friends, the sparrows.

J. N. HALL: I am satisfied that a large amount of the injury of my fruit is attributable to the scarcity of birds in my locality.

F. WELLHOUSE: Why kill the hawk, when it destroys so many mice and rabbits?

MR. DEMING: Mr. President, I now desire to say that I did not condemn the cat-bird and thrush because I thought they deserved it, but for the purpose of drawing out the opinions of the members of this Society on the bird question, and I am very much pleased with the result.

The Secretary here announced the receipt of a dispatch to the Society.

DISPATCH.

DUBLIN, IND., Dec. 17, 1879.

To Prof. E. Gale, President State Horticultural Society, Holton, Kas.:

Your hearty greeting received. Accept the cordial response of the Indiana Horticultural Society, and the hope that you may never falter in the good work. This session is the best ever held by this Society. SYLVESTER JOHNSON, *President.*

W. H. RAGAN, *Secretary.*

Adjourned.

WEDNESDAY EVENING.

The President called the meeting to order, and the exercises opened with music; after which, the following essay was read:

HISTORY OF DOUGLAS COUNTY HORTICULTURAL ORGANIZATION.

BY SAMUEL REYNOLDS, LAWRENCE.

As a delegate from Douglas county to this meeting, I have taken upon myself the task of submitting a paper under the above caption. I do this in the hope that such a paper will neither be out of place nor uninteresting. A historical sketch of such a society, which has been in successful operation for the last twelve years, and which, if all its records were published in full, would furnish whole volumes, must necessarily be but a mere outline—a few gleanings from an abundant harvest—or like a few specimen apples from a well-filled orchard.

ORGANIZATION.

The idea of forming the Society originated in the mind of the efficient Secretary of this Society, G. C. Brackett. It was organized October 3, 1867, with seven members only. The first President was E. D. Ladd, and G. C. Brackett was the first Secretary. The other five members were James Christian, Wm. Soule, G. W. Deitzler, B. F. Diggs, and Bob Wilson. G. C. Brackett is the only one of the original seven still connected with the Society. The membership has steadily increased, with some fluctuations, however till the present number has reached seventy-six. Occasionally one who had "put his hand to the plow" would "turn back," but his place was always promptly filled with either a veteran horticulturist or a "new recruit."

The nomenclature of membership is very interesting and significant. The Society owns a Brackett which has always proved a constant and reliable support; two Savages who never allow the exercises to become *tame;* a Deming who continues to grow fruit for the people; and a Pearson who has, doubtless, inherited from his father a great fondness for *pear* culture.

The list of significant names is too long to pursue in this limited paper; the above specimens must, therefore, suffice.

In addition to contributions from the membership, the Society is often favored with valuable remarks and suggestions by Chancellor Marvin; with scientific reports on entomology and meteorology by Prof. Snow; and with analysis of chemical fertilizers by Prof. Patrick, all of the State University.

About half the membership is composed of ladies, who take part in the discussions, and often favor the meetings with poems, or essays on flowers, home adornment, and kindred subjects. At every meeting they prepare a bountiful and social repast, thus combining enjoyment, pleasure and business. This social feature of the meetings is considered one of the factors of success.

MEETINGS.

The first meetings of the Society were held in James Christian's law office, which was located in what was known as the "Deitzler building," in the town of Lawrence. Since then they have been held in various places, and in all parts of the county; in the winter months in public halls, in the court-house, and latterly in a suite of rooms furnished by the University. The custom has always been to hold the summer meetings at the rural residences of the members, in the different parts of the county. Experience has proven that the beneficial influence of the Society is more widely diffused, and the interests of horticulture better promoted, by this plan, than by holding them in one stated place, though that place may be central. In those townships of the county where the meetings have been most frequently held may be found the most fruit, the best orchards, and the greatest intelligence and enterprise. These results are plainly traceable to the influence exerted by the Society.

ITS USEFULNESS.

Although the Society has had its difficulties and discouragements to encounter, one of which was a split, and a rival organization, yet it has always kept up its meetings, and pursued the "even tenor of its way."

It is admitted by the best informed on horticultural questions, that the members of this society have done more than all the State besides in determining the safest varieties to plant and the best methods of culture.

The past twenty years have been largely experimental, from which the present results and determinations have been reached, and which are invaluable, not only to our own county but to the whole State, and must be credited to that society. From the experience of the past, labor can be more intelligently and profitably applied in the future, and with surer and better results.

In conversation a few weeks ago, with a very intelligent gentleman of Douglas county, who is well posted in horticultural matters, but who is not a member of the Society, I asked the question, "What influence, in your opinion, has the Society exerted in encouraging the cultivation and production of fruit in Douglas county?" He replied: "It is the grandest organization the county ever had, and has, in my opinion, more than quadrupled the production of fruit, placed the county in the front rank of horticulture in the State, and the future benefits to be derived from it are incalculable." Said I: "Then why do you not, Mr. P., join the Society and help along the good work?" "Oh," said he, "now you have cornered me; I have no sensible or valid reason to give. I suppose I feel like many others who leave the willing ones to do all the work. But I can assure you I read all the reports, and take much interest in them." Mr. P. is a representative character, and typical of a large class. It is passing strange that so many profess a great interest in horticulture, and still withhold their support from organizations for its advancement.

Music.

THE MORAL INFLUENCE OF HORTICULTURE.

BY D. W. HAVENS, D. D., HOLTON.

Horticulture or gardening, the culture of fruits, flowers and esculent vegetables, as distinguished from agriculture or the culture of fields, and the production of the great necessaries of life, boasts the highest antiquity of all human pursuits. "And the Lord planted a garden, eastward in Eden, and there he put the man whom he had formed, ... to dress it, and to keep it." We do not stop to inquire into the authenticity of the Mosaic account of the creation, or to prove its consistency with the discoveries of modern science, but adopt the more rational course, accepting it as true until a more reasonable account of the origin of our world is presented; one that will give a more accurate description of the natural order in which the various portions of what it contains came into existence, and one which shall derive man from a nobler origin; one that shall be in clearer correspondence with his intellectual, and moral preëminence, and more fitting to his spiritual nature and immortal destiny. The planting of a garden, and placing it in the care and under the culture of an intelligent being, and of high moral endowments, may be regarded as typical of what is required in one who engages in this the most ancient and beautiful of all the fields of human labor. Shakspeare recognizes the antiquity and natural dignity of horticulture when he makes the agrarian Jack Cade ask:

"When Adam delved and Eve span,
Where was then the gentleman?"

From traditions which have come down from prehistoric times, it is evident that the art of horticulture was then carried to a degree of excellence unsurpassed in any subsequent age of the world's history, and achieved results which to us appear marvelous, and must be included among the lost arts. With all the inventions, improvements and multiplication of modern implements and machinery, with the experience of fifty centuries from which to learn, there is nothing in all the wonderful achievements of modern horticulture that can compare with the "hanging gardens" of Chaldea's magnificent monarch, which he caused to be constructed that, even amid the architectural splendor of imperial Babylon, his queen might be reminded of the mountain and forest scenery of her native Media; or with the beautiful gardens of Solomon, so renowned in Hebrew tradition, a description of which is given in that exceedingly oriental Epithalamium, or marriage song, found among the books of the Old Testament, and is regarded by spiritually minded Christians as typical of the church, "the Garden of the Lord." Referring to these gardens of Solomon, Cowley says:

"When the great Hebrew king did almost strain
The wondrous treasures of his wealth, and brain,
His royal Southern guest to entertain;
Though she on silver floors did tread,
With bright Assyrian carpets on them spread,
To hide the metal's poverty;

Though she looked up to roofs of gold,
And naught around her could behold
But silk and rich embroidery,
And Babylonish tapestry,
And wealthy Hiram's princely dye;
Though Ophir's starry stones met everywhere her eye;
Though she herself and her gay host were drest
With all the shining glories of the East;
When lavish art her costly work had done,
The honor and the prize of bravery
Was by the Garden from the Palace won,
And every rose and lily there did stand
Better attired by Nature's hand."

Scarcely less magnificent is Homer's description of the gardens of Alcinous, the King of the Phæcians, which, if true, surpassed anything the modern eye has ever witnessed or imagination conceived; and the fabled "Gardens of the Hesperides," or the evening star, which were situated where the setting sun quenches his golden beams in the dark and tumultous waves of the Atlantic—the abodes of the beatified dead—were in perfect accordance with the imaginative and poetic mind of the ancient Greek. Coming down farther amid the growing centuries, Gibbon, with pen dipped in colors of beauty, painted the Italian shores of the Tyrhennean sea, studded with magnificent villas, surrounded by spacious gardens, in which were cultivated all the varied and beautiful productions which wealth could gather from every clime, and where those iron-souled men who ruled the world found relaxation and rest from cares and labor, and gratified those æsthetic tastes which elevate the mind, refine the life, and ennoble the soul. However advanced and preëminent may be many of the industrial arts at the present day, the more we learn of the far past the greater is our astonishment, that with such apparently feeble means, results so marvelous were reached. In the light of what is known concerning prehistoric times and men, it is impossible to substantiate those wild theories which some scientists, like Heckel and Darwin, have advanced concerning the original savagery of the race. On the contrary, from an intelligent induction of ascertained facts in history, it is evident that, from the time of the fall to the Christian era, the human race was gradually deteriorating, and that from the latter period it commenced rising and advancing towards its original excellence. This progress is still going on, and we believe that to-day, taking the whole world into the view, it is better, socially and morally, and occupies higher ground, than at any other period since the fall.

Horticulture has a literature, as well as history. All ancient writings extant, poetic and historic, philosophic and political, from Sanchoniathon down to Thomas More's Utopia, are more or less descriptive of Nature, not alone in the rude and uncultivated state, but as improved and beautified by the art and labor of man. To Sanchoniathon we are indebted for a description of Nebuchadnezzar's "hanging gardens." The character, arrangements and productions of a Grecian garden as it was a thousand years before Christ, are preserved in the pages of Homer's immortal Iliad. It was from such a scene that Plato derived the materials for the construction of his ideal Republic. Virgil, Rome's greatest poet, stepping down, or rather up, from the heroics of his "Æneid," has given in his "Bucolics" and "Georgics," rules and directions for the pursuit of horticulture, and various transactions connected with it, to which modern art and science have added absolutely nothing. Inventive skill has greatly improved and multiplied the implements used in horticulture, and its productions have become greatly increased, but the methods and processes of cultivation remain very much the same. In regard to certain processes, such as grafting and inoculating trees, the care and culture of different kinds of plants, the management of bees, and the improvement and preservation of fruits, the directions of Virgil are as full, and as applicable to horticulture now, as in the days of the Emperor Augustus. During the middle ages, when almost every industrial pursuit languished, in the general confusion and passion for arms, and the consequent insecurity that attended every peaceful pursuit and even life itself, horticulture still flourished, and the gardens and orchards and vineries attached to convents and monasteries were marvels of beauty and productiveness. The sacred character of their owners preserved them from molestation. It is to the monks of the middle ages that we owe not alone the preservation of many of the works of ancient genius, but the perpetuation of some of the most valuable of the fruits, and the introduction and acclimatization of many others which have become necessities in our gardens and upon our tables. Great impulse has been given to horticulture, as an art, by the many works upon it, which in recent years have issued from the press. This is emphatically true in respect to that special department denominated "Landscape Gardening," in which Frederic Law Olmstead and the late A. J. Downing have rendered such eminent service. The fanciful arrangements of French gardens, the angular and staid proportions of the Dutch, and the quincunx form of the English, patterned after the old Saxon form of battle, which prevailed in the last century, have given place to arrangements in which the best features of all forms and styles are combined. No undue proportion is given to any one kind of production, but trees and shrubs, fruits and flowers, vegetables and vines, are found in due proportions, and so blended as to utility and beauty, as to please the eye and gratify the taste.

But however interesting and inspiring the contemplation of the historic and literary aspects of horticulture, there is another aspect in which it may be viewed, and which invests it with far greater importance. There is an influence exerted by it which is calculated to impart instruction to the mind, and touch the affections of the heart. In other words, it has a *moral influence.* By moral influence is meant that power which any outward object has to impress the higher nature of man, arouse and gratify the moral feelings, and elevate the character. It is denominated "moral" to distinguish it from physical influence. The taste of some rare and choice fruit produces a sensation of pleasure which thrills every nerve of the body. That is a physical influence, or effect. Now if it shall also touch the moral feelings, and lift the thoughts to the "Giver of every good and perfect gift," and arouse sentiments of gratitude to Him for his goodness; or, if the pleasure experienced causes us to remember that it was the labor and self-sacrifice of another who planted the tree that bore the fruit whose taste has given us pleasure, and shall produce in us the desire, and stimulate an effort to multiply the sources of the same enjoyment for others, it shows that we are subject to an influence that has touched the higher moral nature, and aroused its noblest, most God-like attribute—*benevolence.* There is something in the pursuit of horticulture that makes such an influence on the mind and heart more powerful and more permanent than any other. The garden has always been considered the scene best adapted for silent meditation and serious thought. It was among the trees and flowers of the Academia that Socrates, Plato and Aristotle excogitated those profound works which have secured for them an earthly immortality. It was among the calm scenes and beauties of his Tusculan villa that Cicero composed those philosophic works which have given to him greater renown than his silver-tongued eloquence in the Senate-house or the forum. When Diocletian laid aside the imperial purple and abdicated the throne in the most splendid period of the Roman Empire, he retired to his native Illyrica, and spent the remainder of his days in horticultural pursuits, deaf to all solicitations to resume the scepter of the world. We seem to see the thoughtful brow of Sir William Temple, the most astute diplomatist of his age, in his garden, his favorite resort, devising ways and means for the preservation of the peace of Europe, and at the same time increasing the power of England; we seem to see the towering form of the great Marlborough as he paces to and fro between the rows of giant box, scarcely more stately than himself, planning those campaigns which resulted in the memorable victories of Blenheim and Malplaquet. And it was in the solitude of his garden, in silent and sweet communings with his Heavenly Father, that the mighty Chalmers spent the last hour before retiring to that rest which was destined to be eternal. If "the undevout astronomer is mad," he who can stand amid the luxuriance and beauties of the world of horticulture spread out around him and experience no emotions of gratitude to the Author of it all, and feel no impulse to goodness from it, must be impervious to all moral impressions—a condition forcibly illustrated in that striking figure of the Scripture, "The ox knoweth his owner, and the ass his master's crib; but Israel doth not know: my people doth not consider." In that differentiation of knowledge and consideration, is drawn the broad line of demarkation between a moral being and a brute, and consequently the Heaven-wide difference in the influences by which they are respectively controlled.

But, to be more specific, and pass from the consideration of the abstract to the concrete, horticulture, as connected with the larger pursuit of agriculture, as must always be the case in a new country, may be made effective in forming habits of industry in the younger members of the family, and in developing tastes, and in acquiring skill in certain things which will be of great advantage in after-life. Many a fine colt has been spoiled and its value destroyed by putting it to a work which its immature strength was incapable of performing. So, many a farmer's boy, who might have developed into a strong and vigorous manhood, has had his physical energies paralyzed, his health destroyed, and his ambition crushed, by being subjected to labor in the field, for which his immature and growing strength was wholly inadequate. It is unquestionably owing to this cause that a peculiar class of diseases belonging to the rheumatic and neuralgic types are so prevalent in agricultural communities, resulting often in premature old age and untimely death. Even worse is the overtasking of their strength in childhood and youth, blunting the moral feelings and dwarfing the intellectual powers.

But if, as when a lad is apprenticed to a mechanical trade, he is first given to do some of the lightest and least important work, and is gradually fitted to undertake that which is larger, requiring greater strength and skill, the farmer boy was treated in the same manner, and before he is required to do a man's work in the field is thoroughly trained in the rudiments of practical horticulture, it would be laying the foundation of a taste and skill in the one department, which would eventually prove of great use and advantage in the other. By requiring of him only that which he could do, and do well, his ambition would be incited to do more, and reach an equal excellence in more advanced and important labors. The successful grafting of a tree or budding of a sprout, is an achievement in a boy that might lead to important results. Giving to the younger members of a family the care of a garden, causing them to feel the responsibility for its success or failure, would beget habits of industry which they would retain in all their after-life. The late Col. William L. Stone, of New York, when giving some reminiscences of his boyhood, related, among other incidents of his farm life, that his father assigned to him and his brothers the care of the garden. They were kept at work on it early and late, and during the interval of school hours. The reasons given by their father to incite them to diligence did not commend themselves to their minds as entirely consistent, but appeared to have a serious defect in their logic. But as there was no appeal from the authority that urged them, unquestioning submission and obedience was their only safe course. As soon as the earliest rays of light began to appear in the morning, their father's voice was heard, calling: "Come, boys—up and buckle to it; it is a good time to work in the cool of the morning, before the sun is up." As soon as dinner was over, it was "Come, boys—buckle to it; now is a good time to pull the weeds—the hot sun will kill them quickly." At evening the call was still varied: "Come boys—buckle to it; the cool of the day is a good time to work." They thus gained habits of industry, and at the same time learned a lesson which they never forgot, that it is always a good time to work.

Early practice in horticulture is a school of instruction where the young will gain a knowledge of many things which will be useful to them in whatever pursuit their life may be passed. To be a successful farmer does not require any great amount of intelligence, or a range of knowledge extending beyond its rather narrow sphere. But to become a skillful horticulturist, demands higher intelligence, and a greater knowledge of many sciences and arts. It may not impart a thorough knowledge of botany and its cognate subjects, but will give that practical acquaintance with the varieties of horticultural productions, and their respective adaptation to different soils and atmospheres, which will lead to the introduction, improvement and propagation of all valuable fruits, flowers and vegetables. A person may have a thorough and accurate knowledge of the science of botany, and be able to point out to the minutest particular the structure of a flower, the organic construction of a fruit, and the chemical elements of vegetables, and yet in the practical application of his knowledge, make as bad a mess of it as would the astute mathematician who, in the solitude of his study, works out the logarithms and formulas by which the mariner guides his ship across the pathless ocean, determines his latitude and longitude, and keeps his course straight as the crow flies toward his destined port, were he to undertake to navigate a ship himself, with all his scientific knowledge, and without practical skill, he would probably end his voyage on some reef of rocks, or in the bottom of the sea. Among agriculturists there is a deep-seated prejudice against "book-farming," as they denominate scientific farming. On the other hand, the agricultural scientist is accustomed to ridicule the rude and wasteful methods of the practical farmer. Theoretical science, and science applied, though necessarily intimately connected, yet are the qualifications required for them entirely different. In order to work out a theory, patient investigation, accurate knowledge and profound thought are demanded; but its verification and application require the intelligent mind, practical skill, and physical labor. The scientist may look with contempt on the man of toil, whilst the latter repays him with interest, by laughing at his fanciful ideas. But the one cannot do without the other, any more than the inventor of the steam engine or the complex harvester can do without the skillful mechanic to work out his plans and give practical utility to his designs.

Early training in horticultural pursuits will be productive of excellent results. We consider it most unwise to force the young into pursuits for which they have no natural taste or inclination, nay, may have a positive aversion. This is a consideration, too often disregarded in making provision for the future of children. Too little regard is had for difference of tastes and dispositions and aptitude, and in consequence, great and fatal mistakes are made in choosing the life-pursuit of a boy. The pride and ambition, perhaps the necessity of parents, consign them to occupations and place them in positions where they will be as much out of their element as a fish out of water. Many a good farmer or mechanic has been spoiled by sending him to college, or to a counting-room; and many a boy is now toiling with crushed spirit on a farm or in a workshop, chafing under the demands of uncongenial pursuits, in which he will never gain any great excellence, who would have made his mark in the world had he been placed in circumstances for the development of his natural taste and the improvement of his natural abilities, and more in accordance with the bent of his genius. There are men in the learned professions to-day — ministers, lawyers, physicians — who would have been more effective and successful in life, had they been put to the anvil, the carpenter's bench, or the plow. And there are those among the sons of toil, gaining a bare subsistence by indifferent farming, who, had the opportunities been given them, would have stood among the foremost in the forum, in the halls of legislation, in the pulpit, or in any other position where their native talent and genius would have found their appropriate sphere. This is equally true of the point under consideration. When one or more of a family manifests a taste for horticulture, instead of checking it and calling it nonsense, it should be encouraged and developed, and in after-life he will carry into effect the training and skill obtained in boyhood, by making improvements in cultivating, multiplying the varieties, increasing the quality, and consequently enhancing the value of fruits — so blending the useful and the beautiful as to make our farms, instead of the rude and unattractive objects they generally are, picturesque and attractive — a pleasure to the eye and profitable to the pocket. The appearance of a man's farm and garden will generally give a pretty correct index of his moral character and habits.

If the foregoing remarks are founded in truth, it will be evident that horticulture can be made a source of pleasure and moral improvement, as well as profit. The ancient saying is emphatically true of this department of labor, that "the man who makes two blades of grass to grow where only one grew before, confers a benefit on the world." The main object in systematic horticulture is, to secure in greater varieties, and increase by cultivation, rare and valuable productions. There is a peculiar interest awakened, and satisfaction experienced, in marking the development and growth of what promises to be a valuable addition to the garden and orchard. The last decade of years has witnessed a wonderful degree of enterprise and success in this direction, and the multiplication of varieties of horticultural productions has been remarkably great and important. The man who produces a new and valuable fruit or vegetable for the table, is entitled to and will receive the gratitude of all. Many who have done this have won for themselves an earthly immortality, by having their names attached to some production — fruit, or flower, or vegetable—which they have given to horticulture, just as the scientist who has discovered a new mineral or chemical agent or element, has it called by his name; and thus it becomes linked with the history of his special science, where it will stand as long as the science exists. Some of the achievements in horticulture are marvels of industry, enterprise and sagacity. A few years ago, when conversing with a friend who owned and cultivated a large farm in Connecticut, but gave little attention to horticulture—regarding it as too trifling a business for him to have anything to do with—he pointed to a small field containing less than an acre of ground, which was used for market-gardening, and said, "The owner of that garden makes more money from its cultivation than I do from my whole farm." If convenient to a good market, the business of market-gardening is very profitable. Acre for acre, the apple orchards of Michigan, the peach orchards of Delaware, and the orange orchards of Florida, yield richer returns than do the wheat-fields of Minnesota, the corn-fields of Kansas, or the cotton-fields of Mississippi. The pleasure and moral influence of horticulture are thus described by Cowley in these beautiful lines, written two hundred years ago:

> "We nowhere art do so triumphant see,
> As when it grafts or buds the tree.
> In other things we count it to excel,
>   If it a docile scholar can appear
> To Nature, and but imitate her well;
>   It overrules and is her master, here:
> It imitates her Maker's power divine,
> And changes her sometimes, and sometimes does refine.
> It does, like grace, the fallen tree restore
> To its best state of Paradise before."

Again, horticulture affords to the farmer the means of enjoyment and recreation. He needs relaxation and recreation quite as much as those engaged in other pursuits. The unremitting application of the mental powers to any one subject wearies and exhausts them, and renders a respite or change of subject necessary to the recovery of their vigor. This is equally true of the physical energies. Their constant employment in one direction and on one kind of work, tires with its monotony and exhausts the strength. Their recuperation requires rest or occupation in some other kind of labor. The relation of mind and body, the intellectual faculties and physical energies, is of such a nature that they act and react upon each other. What affects the one, will in some degree have an influence on the other. The dwellers in a city, or town, or village, have various means and resources for relaxation which the farmer has not. Where many people are congregated, there will always be a thousand devices and ways of attracting the mind and resting the body—some instructive and elevating, some entertaining and amusing, while others are of questionable morality, and others still of demoralizing tendency. The city mechanic and laborer spends his hours of relaxation and recreation according to taste, disposition and habit, either in some place of amusement, or attendance on scientific lectures, or visiting collections of natural curiosities or galleries of art, or, as is too often the case, in the haunts of dissipation and vice. An effort is being made at the present time in favor of the city mechanic and laborer, reducing their hours of labor, which gives to them leisure and opportunities for recreation and mental improvement, which are denied to workingmen less favorably situated, such as the farmer and his laborers. There are seasons of inactivity when the professional man and the merchant have their vacations, and spend the time recuperating among the mountains, or on the sea-shore, or in some fashionable and gay watering-place. Some embark in their yachts, and sail leisurely from port to port along the coast, while others, less pure and elevated in their tastes, craving excitement rather than enjoyment, follow their trained horses from place to place, and are only happy in the fierce excitement of the race-course. These are inconvenient and altogether too expensive recreations for the farmer. His enjoyment must be sought nearer home, and in sources within his power to obtain; and every farmer has it within his power to combine recreation with profit. He needs occasional recreation and rest. We do not mean by this inactivity and idleness: to an ambitious and conscientious man this would be the most arduous and unsatisfactory of all work. The student, wearied with investigating the intricacies of some profound subject, seeks relaxation and refreshment of mind, not in giving himself up to a *dolce far niente*, or doing nothing, but merely turns his mind in some other direction, and gives himself to a lighter kind of mental labor, the reading of some work of fiction or of poetry. It is because the farmer does not take his recreation in modes which are within his reach, is the grand reason why so many of the agricultural class seem to have lost all mental activity, and become stolid, unintellectual, and perhaps something worse. If their leisure hours, which are too often spent in mere idleness, or in the country store, or town saloon, were devoted to horticulture, improving the garden and orchard, beautifying the grounds around their homes, and studying the best methods of fruit-growing; if the long winter evenings, instead of being wasted, were spent in the study of standard works upon the subject, or reading horticultural papers, suggestive of experiments and improvements in fruit raising and home adornments, the effect would soon be apparent in the improved appearance of their houses and their surroundings, and in the more varied and attractive aspects of their orchards and gardens. Such employments would afford relaxation from the severer labors of the field, answering the same purpose to the farmer that the pleasure yacht does to the merchant prince, or the celebrated trotter to the professional man; while their results would be what neither the yacht nor the horse can ever secure—an ever-present and ever-increasing source of happiness to himself and his family.

Horticulture also produces and develops a taste for the beautiful. The garden and orchard are used in the literature of all nations, prose as well as poetry, as synonyms of beauty. There are a thousand things connected with the lives and tastes of men which all point back to some period in a remote antiquity, when our earth presented a more beautiful aspect than it now does, and its inhabitants were purer and happier than they now are. The traditions of such a condition, found in the folk-lore of all peoples, and especially those nations which inhabit the countries in the immediate vicinity of what is generally conceded to have been the cradle of the race, have ever had great influence on the literature of the world, and the character and conduct of men. As among all nations traditions exist of an universal deluge, in which all save one family of the inhabitants of the earth were destroyed; as there are also traditions of a time when an entire change occurred in the language, physiognomy and character of men, out of which has sprung the different languages and races of the world, so there are also traditions of the existence of a garden in that golden age of the past, which was always floating in the imagination of the Greek poets, as preëminent for luxuriance and beauty as the race that cultivated it was superior to all the inhabitants of the earth who have succeeded them. The wealth of the world has been lavished in the vain attempt to rival the picture presented in these traditions, by the blending of trees and vines, fruits and flowers, shrubbery and grasses, statues and fountains, in scenes of fertility and beauty. And although falling short of our conceptions of the primitive Eden, they are marvelous illustrations of what wealth, taste and art can accomplish. The most distinguished artists have always found in the ample field of horticulture those subjects which have given inspiration to the mind, power to the pencil, and reins to the imagination. Wherever the love of natural beauty is exhibited in the cultivation of fruits and flowers, it is evidence of an intellectual elevation, and æsthetic taste, whether in the magnificent garden of the wealthy or in the humble door-yard of the poor. The love of the beautiful finds place in the hearts of the lowly and uncultivated, just as truly as in the intellectual and refined.

This suggests another and powerful influence of horticulture—that of refining the heart. This is true, to some extent, of all pursuits associated with the visible works of nature. The sailor, who comes in contact with nature in some of its grandest and most terrible aspects, becomes bold, daring and superstitious. He whose home is amid the sublimities of mountain scenery, feels an influence from its free air and natural defenses which produces that strong attachment to home, that love for the sublime, and that devoted patriotism for which mountaineers are distinguished. The influence of the more calm and tranquil scenes of plains and prairies and forests, gives rise to a different class of feelings, and develops entirely different traits of character. The mind of one reared amid the artificial life of the city, will take a tinge from the objects and influences that surround him. He will exhibit a lower type of manhood, more selfish, effeminate and vain, than one who has only been familiar with the free and natural life of the mountains, the forests, or the prairies. Equally distinctive and effective, though calling into exercise very different feelings and emotions, and enstamping different characteristics, are those influences which spring from horticultural pursuits.

An old man, when setting out some young fruit trees, was accosted by a stranger, who asked: "Are you so foolish as to think that you will ever partake of the fruit of the trees you are planting?" "No," was the reply, "I do not expect it. But when I entered life, I found fruit-bearing trees which had been planted by the hands of men long since passed away. I am trying to pay the debt I owe to them for the enjoyment I have had of their labors, by making the same provision for those who shall partake of the fruit of these trees when I am gone." Here was a refinement of moral feeling and an expression of benevolence rarely found, excepting among those whose lives have been passed "far from the madding crowd's ignoble strife." The man who has planted an orchard, whose abundant and valuable fruits are a source of gratification to many generations, has done that which shall keep his memory green when the stone that marks the spot where he is buried shall have crumbled into dust. There is a subtle and exceedingly powerful influence that springs from the culture of flowers, which strengthens the virtuous feelings, imparts brightness to the most laborious and dullest life, and brings an unwonted light into the eye and color into the wan cheek of the invalid. However exaggerated and grotesque his delineations of character, Dickens is always true to nature when describing the affections and feelings of the heart. In many of his works he alludes to the influence of flowers, and gives exceedingly touching illustrations of its effect. His most interesting characters and effective scenes are found in the homes of the lowly, where some poor and virtuous girl, or solitary young man, in the human wilderness of London, condemned to ceaseless and ill-recompensed toil, cultivate on the window-sills of their attic rooms a few sickly plants, in old blacking-pots, or broken bits of crockery, or dilapidated wooden boxes, which are cherished mementoes of the flowers amid which they sported at their childhood homes in the country. And that was a touching and beautiful incident, the outcome of the same influence, related by Eugene Sue, of a poor, beautiful, and fallen girl, whose dead body was one morning dragged out of the Seine, and in the bosom of her dress was found a bunch of long-withered flowers, the last relic and symbol of her virtue, and sad memento of her pure tastes in the days of her innocence.

Nor is the influence of horticulture any the less effective upon the moral feelings. Nature wears aspects so varied as to touch every point and fill every part of our complex being, animal and intellectual, moral and spiritual. It is one of the grandest of all the mysteries enwrapped in our microcosm, that nature has its adaptations to each and all. However various the tastes among men, each finds that which is fitted to his own especial tastes and yearnings. Shakspeare, whose wonderful familiarity with all outward nature is only surpassed by his knowledge of the inner workings of the human heart, its needs and aspirations and opportunities, has said that the thoughtful mind —

> "Finds tongues in trees, books in the running brooks,
> Sermons in stones, and good in everything."

Jones Very, one of our older American poets, thus sings:

> "The babbling brook doth leap when I come by,
> Because my feet find measure with its call;
> The birds know when the friend they love is nigh,
> For I am known to them, both great and small.
> The flower that on the lonely hillside grows
> Expects me there when spring its bloom has given;
> And many a tree and bush my wanderings knows,
> And e'en the clouds and silent stars of heaven:
> For he, who with his Maker walks aright,
> Shall be their lord, as Adam was before;
> His ear shall catch each sound with new delight,
> Each object wear the dress that then it wore,
> And he, as when erect in soul he stood,
> Hear from his Father's lips that all is good."

We gaze with very different feelings upon the lofty mountain, whose clear-cut outline is projected against the background of a cloudless sky, than we do upon vast fields of grain, waving with abundant harvests, and ready for the sickle of the reaper. The one speaks of the almighty power of the Creator, the other of his boundless benevolence. An entirely different class of sentiments and feelings is elicited by the spectacle of an orchard or vinery, whether seen in the season of blossoms, when they present a mass of variegated color, such as no mortal hand ever painted, or in the time of fruit-bearing maturity, when fruits of every conceivable form and flavor, and flowers of infinitely varied hue and shape, reveal the skill and attest the beneficence of Him whose undeviating laws are continually ministering to the necessities of the whole animated creation, and combine with earth's productions, elements and qualities adapted to promote the enjoyment of intelligent beings. When we contemplate the almost infinite variety of productions in the field of horticulture, and perceive their adaptation to charm every eye, gratify every taste, please every palate, and touch the most tender and noble sentiments of the heart, we feel not only a refining influence from them, but read in every plant and fruit and flower the love of Nature's God. The wonderful variety of productions of horticulture is pleasantly illustrated by Andrew Marvell. Singing of the "Garden," he says:

> "What wondrous life is this I lead!
> Ripe apples drop about my head;
> The luscious clusters of the vine
> Upon my mouth do crush their wine;
> The nectarine and curious peach
> Into my hands themselves do reach;
> Stumbling on melons, as I pass
> Insnared with flowers, I fall on grass."

The love of horticulture also affords an index of character. Buckle, in his "History of Civilization," brings out into prominence, and illustrates by a variety of examples, the theory that surroundings have great influence in moulding the character and forming the habits of individuals and nations. This theory is in the main correct, though exceptional instances may not be difficult to find. A marked difference of character is observed in men reared amid the grandeur and magnificence of mountain scenery, and those whose lives have been passed on broad and fertile plains; in those who have known only the factitious life of cities, and those who dwell among rural scenes and in constant contact with Nature's works; in those whose homes are by the sea, who have

"Laid their hand upon the ocean's mane,
And played familiar with his hoary locks;"

And those who, far removed from tempest-tossed waters, have never witnessed one of the sublimest spectacles that mortal eye ever gazed upon. In accordance with this principle, applied on a small scale, a correspondence can be traced in the horticultural tastes and methods of a people and their character, both moral and national. We do not undertake to determine which is the antecedent and which the consequent, or whether the character is the effect of the practice, or the practice the outcome of the character. The fact of such correspondence is that to which we have reference, leaving the philosophic point an open question. It requires no very great amount of observation or acumen to perceive such correspondence between the contracted but prolific garden of the Hollander, every inch of which is utilized or made in the highest degree productive of fruits, vegetables and flowers, and those always of the most valuable kinds, and that industry and thrift, and love of order, that sound judgment and steadiness of purpose, that calmness of mind and inflexible determination, which are characteristic of a people that, unlike Mrs. Partington, who undertook to sweep out the Atlantic with a broom, have nevertheless reclaimed their land from the German ocean, and confined that ocean within its natural bounds. The broad and mathematically arranged gardens of England, with their trim hedges and rows of box and unalterable lines, are in perfect accordance with that stately carriage and impressive demeanor, that self-assertion and obduracy of opinion, by which the typical Englishman is known all over the world. There are traits in the character of the Scotchman, his industry and perseverance and inflexible adherence to principle, his love of controversy and disputations, which have grown out of his desperate and successful efforts to wring out of the hard soil and harder climate those productions which are uncongenial to them, and are cultivated with difficulty and at great expense in more favorable localities, that makes of every other Scotchman a gardener if he is not a shepherd.

The inference is clear. If the hard and rugged soil of New England has tended to make its people industrious, thrifty and economical, what large-hearted generosity and widely-diffused liberality should characterize the people who cultivate these broad prairies, whose luxuriant harvests surpass those of the meadows of the Nile, whence all the ancient cities of the Mediterranean derived their breadstuffs; whose fruit-bearing capacity excels that of Normandy; whose adaptation to the culture of the grape is superior to that of the sunny hills of Italy and Spain.

And, then, how many and tender are the memories and associations of childhood connected with the ancestral garden. It was there our infant feet first learned to wander, our first useful labor was bestowed, and our taste for the beautiful formed and developed. These memories can never be obliterated from the mind. However far a man may have wandered from the home of his childhood, and through whatever scenes of magnificence he may have passed, where rare and beautiful plants from every quarter of the globe shed their fragrance and displayed their splendor, through orchards of whose extent and varieties of fruit he had never formed a conception; through conservatories where, at immense expense, orchids, palms and oranges, with other tropical flowers and fruits, are cultivated in endless profusion—but never has he found fruit sweeter to his taste or fairer to his eye than grew in the old home orchard; never beheld brighter or more beautiful flowers than bloomed in the old garden where his feet trod in the days of his childhood—days never to be forgotten, as associated with the experiences of happiness and love; days destined never to return.

"There are gains for all our losses—
There are balms for all our pain;
But when youth, the dream, departs,
It takes something from our hearts,
And it never comes again."

A recent painting, by a distinguished artist, entitled "The Old Sod," represents an Irish emigrant, who had revisited his old home, standing with pensive countenance and tearful eye, gazing on the familiar scenes. There is the humble cabin in which he was born—the same, though dilapidated and ready to fall; there the old field, where blossom flowers and waves the grass, which, for any change in outward appearance, are the same as those he looked upon when a boy, and he realizes that, whatever changes have taken place in the things around him, the greatest change is in himself. The power of the picture is more moral than æsthetic, appealing to the finer feelings and sentiments of the heart, rather than to the artistic taste. Those whose lot has been cast far from their childhood's home, when looking upon the picture, find their minds crowding with its half-forgotten scenes, and their feelings are in sympathy with those of the artist, to which he has given expression in the central figure of the painting. And do we not, when recalling the scene of the ancestral garden, associate with it the forms and features of some loved ones, whose gentle hands tended the flowers and trained the vines?—hands now, perhaps, turned to dust, but the spirits which prompted their ministrations of love now move amid the brighter scenes and amaranthine flowers in the "garden of the Lord."

In closing the subject, and as germane to the occasion and to the objects of that association in whose interest this paper has been prepared, the question that appears most apposite and important, is this: What, in reference to it, are the opportunities, and what the duty, of Kansas? This noble commonwealth is yet in its infancy; but, like the infant Hercules, it has manifested its power in strangling the twin serpents of slavery and disunion, foreshadowing its future greatness and wealth and grandeur. Besides its other natural advantages, Kansas contains the pivotal point of this mighty union of States, around which revolve those vast interests which are rapidly bringing this country into a prominence as a grain-producing and fruit-growing land, such as none in modern times has attained. The topography of the State is as varied and beautiful as its soil is rich, and capable of yielding every kind of natural productions in measureless quantities, and with a rapidly-increasing population, distinguished for the three grand elements of vigorous manhood — energy, morality, and patriotism. Kansas now has opportunities such as have never before been presented to a young State, and if, realizing her responsibilities, these opportunities shall be improved, Kansas is destined to reach a preëminence, not alone for the variety, the excellence and the magnitude of her agricultural productions, but for the superiority and variety of her fruits, and shall win the appellation of the "Garden State of the Union."

Hence, the duty of the people of Kansas is measured by the greatness of their opportunities. The early settlers of New England had a clear perception of the responsibilities of their position and opportunities, and nobly did they bear the one and improve the other. The results of their labors, sacrifices and sufferings are seen and recognized to-day throughout the world. "As the twig is bent, so is the tree inclined," is as true of a man as of a tree — as true of a community, or state, or nation, as of an individual. From present indications, it is evident to every thoughtful mind that the future of Kansas will be determined, in a great measure, by the present generation of its people. The future of Kansas! It requires no prophet's ken to foresee, no inspired pen to predict it. The crisis of her history is passed, and though, like the gallant ship that has come out of the grasp of the tempest with broken spars and torn sails, yet sound in hull, and with colors flying, speeds onward in her voyage, this noble commonwealth, though traduced and injured in consequence of the fiery trial though which she passed in her early history, is now moving rapidly and steadily onward in a career of unexampled prosperity. No indications can be discerned in her horoscope but such as point to a coming prosperity and power which will give her a position in the front rank, if not at the very head of these Western States, within which, after the completion of next year's census, will be concentrated the political power as well as the great mass of the population of the Nation. In capacity for agriculture, and improved methods of cultivation, Kansas is now fully abreast of any other State. With the interest already awakened in horticulture, which is every year widening and deepening, it will not require many years when every farm will be enriched with orchards and vineries, increasing their productiveness, and diversifying and beautifying a landscape, which for natural beauty is unsurpassed by any country in the world. The wonderful increase in the number of fruit trees yearly planted, the attention paid to qualities and varieties of fruit, the existence of an association like this, and the general interest felt in its objects, augur well for Kansas becoming preëminent as a fruit-growing State. When it is considered that the present enormous immigration is mainly composed of men of intelligence and means, a future success may be confidently predicted. The production of such a result is very much in the power of this association. May it prove equal to the great mission it is called to fulfill, and confer a lasting benefit on the State and Nation.

"'Tis first the true and then the beautiful,
Not first the beautiful and then the true;
First the wild moor, with rock and seed and pool,
Then the gay garden, rich in scent and hue.

"'Tis first the good and then the beautiful,
Not first the beautiful and then the good;
First the rough seed, sown in rough soil,
Then the flower-blossom, or the branching wood."

On motion, a hearty vote of thanks was given the essayist.

REPORT OF AUDITING COMMITTEE.

The Auditing Committee on the Secretary's and Treasurer's financial statements made the following report:

We, your Auditing Committee, to whom were referred the Secretary's and Treasurer's annual financial reports, having discharged the trust confided to us, would report that we find, upon an examination of the accounts and vouchers, that the said reports are correct.

G. Y. JOHNSON, *Chairman.*

Adjourned.

THURSDAY MORNING,

(DECEMBER 18TH, 1879.)

President Gale in the chair. Prayer was offered by Rev. D. W. Havens.

HORTICULTURE IN SOUTHWEST KANSAS.

BY A. N. GODFREY, MADISON, GREENWOOD COUNTY.

Every human being has a natural love of fruit. Even the greasy Esquimaux would enjoy a good ripe apple or pear, if he could get it. Every country on the earth has its own wild fruit, supplying the inhabitants with this important part of their summer food. The early settlers in Kansas found the native fruit much better than none, and furnished their tables with raspberries, gooseberries, plums, etc., in their season. This period was of short duration, however, and left about nine months in the year with a bill of fare consisting of corn dodger and bacon for breakfast, johnny cake and pork for dinner, with perhaps a light supper of corn bread and meat. To many who had left an abundance of fruit in "pap's orchard, back yonder," the change was far from being a pleasant one. Is it strange that there seemed an aching void that only an apple could fill? that the very name of peaches and pears, fond memory's chord would thrill?

When the farms were once broken and fenced, farmers began to enjoy some of the luxuries of life. Beans, cooked with green corn, made succotash, a favorite pioneer dish; or, when dry, made an important addition to the winter meals. The pumpkin was the universal sauce, and pieplant, when dried, furnished material for pies throughout the year. Potatoes were the bread and biscuits.

The sorghum-making business became lively, and this cheap and effective sweetening agent was added to every table. With molasses came the process of preserving fruit. The worthy matrons would boil a few plums in a great deal of molasses, and stow away for winter use under the name of "*preserves.*" The skins and seeds of wild grapes were also preserved in this manner. There was so little juice or pulp, that it was never considered.

The process of drying began with the pumpkin, which was pared and cut into long spiral strips, and strung upon rods hung from the rafters; making a delightful rendezvous for the fall crop of flies. One well-remembered preparation called "plum leather," was made by stewing the plums thoroughly, then working the pulp (and worms) through a sieve, and drying in the sun. The product resembled sole leather in appearance and toughness, but would cook up into a very palatable sauce.

The wild gooseberry formed an important part of the fruit diet. Growing in such abundance and furnishing such a keen acid, it was much used for sauces and pies. The paw-paw, persimmon and wild cherry each had its appropriate sphere to fill, but these were little used as articles of food. Watermelons there were in abundance, but as a regular fruit diet they were found to be a glaring fraud. Of blackberries there were a few, and of strawberries there were fewer still. We boys spent many an hour of Indian summer in the woods upon hands and knees scratching among the leaves for hackberries.

Farmers were slow to take any steps toward raising their own fruit. Gooseberry bushes were taken from the moist, cool woods where they flourished, to be planted in dry yards, where the hot sun and chickens allowed no fruit to form. Wild plums were transplanted with similar results. Some of the first settlers brought peach seed, and planted them. From these sprang our first orchards, consisting of a straggling row of trees in the corners of the garden fence, left to grow without care or culture. A few small apple orchards were planted before the war, with trees obtained from far Eastern nurseries. A very few of these trees are now living, but have never borne satisfactory crops.

Kansas horticulture began as the war closed. Our boys came home with vivid recollections of certain orchards in Arkansas and Missouri, and many of them at once planted trees. Then came the "grasshopper years," bringing discouragment and hard times, during which little fruit was planted.

The latter half of the past decade has witnessed a wonderful advancement in our horticultural interests. The immense tide of immigration settling up our broad prairies, has increased the acreage of orchards to a remarkable extent since 1875. Men from the East, with capital and vim, are ready to follow in the path of the pioneer fruit grower and to profit by his experience. At first we were told that fruit would not succeed well in Kansas, but we can now point to thousands of successful orchards and say—therefore Kansas horticulture is a success, *q. e. d.*

The present condition of our horticultural interests is encouraging to the highest degree. From the experience of the past, facts of untold importance have been gleaned. Orchard planting is no longer an uncertain experiment, for our bearing trees teach us what varieties to select and what to reject. Some of the favorite sorts "back East," succeed well here, while others are at most expensive luxuries, and some are entire failures. A few varieties are particularly our own, and succeed nowhere so well as upon Kansas soil. A complete list of successful varieties will compare favorably with that of any other State.

The exhibitions of fruit made at the different fairs and exhibitions have surprised Kansas people and astonished the outside world. We can point with pride to a State Horticultural Society, second to none in the United States. To the earnest, zealous work of its members in the past, is due much of our present prosperity. In every possible way it has aided and encouraged the culture of fruit. By collecting the successes and failures of our best fruit growers, the road for the future horticulturist is already marked out, with guide-boards at every turn and corner. The people of the State cannot too highly appreciate its usefulness, nor render it too much aid in its future work.

We have much to hope for in the near future. Having just experienced a partial failure in most fruits, there is every reason to expect a bountiful crop next year. The past season has been peculiarly favorable to the formation of fruit spurs and buds, and never before were trees so loaded with a tangible promise of a heavy crop.

For our future markets there is an encouraging prospect. A heavy immigration will continue for many years to keep up a good home demand, while a vast country west and south will always look to Kansas for her fruit supplies. Kansas fruit will flow west through railroad channels and over wagon-roads, as it once did from Missouri. Our geographical position is such that many fruits of both the Northern and Southern States may be raised. A few years of well-directed experiment will doubtless prove many fruits well adapted to our climate that are now unknown here. Many wild fruits, that only need careful culture and selection, will undoubtedly develop into valuable additions to our orchards and gardens. It is well known that the persimmon varies greatly in size, flavor and astringency, and might be changed into a large, luscious fruit with little or none of its unpleasant properties. The native raspberry, in flavor and shipping qualities, if not in size, excels many of the cultivated varieties, and could be made of great value by selection. The success of the Wild Goose plum proves the value of our native plums as a basis from which to produce new varieties.

Judging from the past progress in horticulture, what sanguine hopes may we not entertain for the years to come! In the future, many of the present wrongs will be righted. There will be only one name for each variety of fruit. Birds, bats and toads will be protected. Injurious and beneficial insects will be recognized, and dealt with accordingly. Through the agency of moral suasion, of law, or of the shot-gun policy, the swindling fruit-tree agent will become extinct. Popular opinion will be taught to regard fruit pilfering as *bona fide* stealing, and to treat it as such. Fruit will become an everyday necessity, and doctors will become fruit growers. There will be little use for quinine and none at all for stomach bitters. Every tree planted is a doctor bill saved.

ORCHARD CULTURE.

On motion, the consideration of orchard culture was resumed, and the President, by request, ruled that no member should speak more than once, unless by consent of the Society, and not longer than five minutes at any one time. The first point to be considered, What shall we plant in a young orchard?

A. N. GODFREY: Plant corn and potatoes.

J. N. HALL: No small grain.

J. M. MILLER: Corn with pumpkins.

DR. J. STAYMAN: Corn will do for farmers, but near our cities, where there are good markets, small fruits pay better. Kentucky blue-grass for a bearing orchard.

E. J. HOLMAN: Corn in a young orchard should be planted sufficiently distant from the trees to allow of culture along the tree-rows. I prefer small fruits, until trees come to bearing, then Kentucky blue-grass and clover for a couple of years. Late growth is the result of late culture, which is liable to injury.

H. E. VAN DEMAN: Corn is best for a large, or commercial orchard.

HENRY REGAR, Onaga: My orchard trees are twenty-five feet apart, and between I cultivate grape-vines, and protect the bodies of the trees from rabbits and sun-scald, with pieces of boards.

E. J. HOLMAN: Would manure the ground around bearing trees.

SEASON FOR PLANTING.

SAM. REYNOLDS: As early in spring as practicable. Bearing trees should be manured in fall; spread it in spring.

H. E. VAN DEMAN: Plant apples in fall; peach and cherry in spring.

E. J. Holman: Prefer as a rule to plant in spring.

C. W. Murtfeldt: Plant in spring; autumn is objectionable, as the tree will not become so firmly established as to stand the blasts of winter. The general interest requires spring planting.

C. Burdick, Emporia: Prefer spring time for planting.

Dr. J. Stayman: No preference in seasons. Hardy trees will succeed.

Secretary: It is not safe to plant in autumn. I have learned this by trenching nursery trees in autumn. The winter winds will sway them about and make an opening of the ground at the collar, into which snows and rains fall and freeze, making an unhealthy condition. And furthermore, the roots do not take hold of the ground sufficiently to supply the necessary amount of moisture to meet the evaporation of the tree even during midwinter. I have seen thousands of trees which were most carefully planted in autumn, as dry as a broom-stick in spring—undoubtedly caused by the failure to supply needed moisture during winter. The idea that some men preach, that the broken or cut roots must callous to secure a successful planting, is not altogether true. Very true, Nature's first effort always is to repair a wound of any kind, and that effort is indicated by the process of callous. I have known trees which made a most excellent growth and a large portion of the cut extremities of roots did not callous at all.

F. Wellhouse: Spring is preferable.

J. W. Robson: I must concur with the advocates of spring planting.

President: The dry climate during February and March in the western counties, which does not prevail in the eastern, must cause disastrous results in autumn planting.

J. M. Miller: Prefer spring time.

TREATMENT OF BEARING ORCHARDS.

Sam. Reynolds: Sow to grass and clover, and then manure.

Dr. J. Stayman: Sow to Kentucky blue-grass; stimulate with stable manure.

E. J. Holman: Good cultivation and manure.

E. A. Coleman: I indorse fully the recommendations of Mr. Murtfeldt and our Secretary, as to manner and season for planting. I would not use the Kentucky blue-grass in a bearing or any other stage of an orchard. The English blue-grass is far preferable, and in proper season cut and make it into hay. Manure the trees. I have planted among my orchard-rows three rows of raspberry plants. They pay well for the cultivation which the orchard needs.

TREE PEDDLERS.

J. W. Robson: I have a neighbor who, whenever one of these traveling swindlers approaches him, calls for his shot-gun, and a sudden departure follows. If all our people had as good sense, not many of them would come into the State—and the fewer of them the better.

E. A. Coleman: They are well calculated for their business, can tell their man at sight, and with plenty of "soft soap" get away with him, bag and baggage. I have been a resident of this State for twenty-five years, and not one has ever called on me.

N. P. **DEMING**: Whenever one of that class of men calls on me I wind him up, and advise him to tramp into Missouri.

Adjourned.

THURSDAY AFTERNOON.

President Gale in the chair.

CONSTITUTIONAL AMENDMENT.

The following amendment to Art. III of the Constitution was offered by G. C. Brackett:

Resolved, That Art. III of the Constitution of this Society be so amended that any person who shall have performed the duties of a County Vice-President, under the provisions of Art. VII, for one year, shall be enrolled an annual member; and that when such services shall have been rendered for the term of ten consecutive years, such person shall be enrolled as a life member, and entitled to all the benefits of such membership.

On motion, the amendment was concurred in.

REPORT OF COMMITTEE ON NEEDED LEGISLATION.

The Secretary announced the receipt of the report of the Committee on Needed Legislation, appointed at the twelfth annual meeting, which he was requested to read. Following is the report as adopted:

Your Committee on Needed Legislation would respectfully report, that they secured an appropriation at the last session of the State Legislature, in the following sums, viz., $2,500 for the fiscal year 1880, and $2,500 for the fiscal year 1881. Further, your committee desire to say, that in view of the courteous treatment with which they were received on every occasion by the members of that body, and the unanimity with which the justness of the claims presented was conceded, an earnest expression of gratitude should be formally made by this Society.

To his Excellency Gov. J. P. St. John are special thanks due for his special message to the Legislature, favoring an appropriation of State funds to aid in the work undertaken by this organization.

Respectfully submitted.

E. P. DEIHL, Ch'n,
G. M. WAUGH,
C. H. GRAHAM,
Committee.

On motion, the report was adopted, and a hearty vote of thanks tendered the committee, and the members of the Legislature, for the faithful manner in which they had served the Society's interests.

REPORT OF COMMITTEE ON PRESIDENT'S ANNUAL ADDRESS AND SECRETARY'S REPORT.

The committee to whom was referred the President's annual address and the Secretary's annual report, reported, and the report was amended and adopted, as follows:

To the Kansas State Horticultural Society: The committee to whom was referred the President's address and Secretary's report, would call attention to a few of the many valuable hints contained in these documents.

THE SECRETARY'S ANNUAL REPORT.

1. If the objects and aims of the National Agricultural Society are as set forth in their circular letter, it should receive the hearty indorsement of the Kansas State Horticultural Society, and to that end we would recommend that the Secretary continue his correspondence with said organization, and that the Executive Board take such action as they may deem wise in furtherance of the object.

2. If the National Board of Trade referred to, designs to seek markets for American products, it might be well to render them such encouragement and assistance as would be compatible with our interests, as the time is not far distant when American fruits must to a great extent seek a foreign market. Successful shipments have already been made to Europe, and it might be well to further develop that trade.

3. It is exceedingly gratifying and encouraging that six new sisters have been added to the number of societies in the State since our last annual meeting. Reaching from the extreme northeast to the Arkansas valley on the south, and in view of the fact that many counties will organize during the next year, and that these especially, as well as many of the old societies, need help and encouragement, we believe the suggestion of the Secretary to appoint an *ad-interim* committee a good one, and would recommend that the Executive Board act as that committee; and when impracticable for one of their number to answer calls for personal assistance in the organization of district, county or local societies, or to respond to requests for addresses, they may delegate some other member of this Society to perform such duties; and if the funds of the Society will permit, a reasonable appropriation should be made to defray the necessary traveling expenses of those engaged in this work. Much valuable information might be gathered up by this committee for the benefit of the Society.

4. The time has come when the people of Kansas look to this Society for definite information as to how, when, where and what to plant, to obtain success in fruit and ornamental trees. Our locations, exposures and elevations are so varied that a stated, "iron-clad" set of rules, as to just what, when, where and how to plant, suitable for the whole State, would be extremely impracticable. But investigations have been pursued to that extent that a small, select list can certainly be made that might be planted in almost

every locality with reasonable hopes of success. If we have developed the fact that there is even one variety of apples that can be planted with assurance of general success throughout the State, so that we can publish it for the benefit and guidance of tree planters, our work even then has not been a failure. The work of the Society should be in future directed to the developing and determining of *facts*—for one proven fact is of more practical value than all the fancy we can indulge in for ages.

5. It being necessary to the faithful and vigorous prosecution of the work, and dissemination of information, that important matters be published, at semi-occasions, long before our volume can be published, we deem the newspaper the most practical way to reach this end, without expense to this Society; and if it becomes necessary to designate some periodical, we would suggest that the Secretary be requested to furnish, from time to time, such matter as he may deem important to be immediately published, to the *Spirit of Kansas*, published at Lawrence.

6. Realizing that the State Legislature of Kansas has placed us under obligations to be active as well as vigilant and careful, and that we need to show ourselves judicious in the expenditure of the appropriations made to this Society, we deem that no better use can be made of the money than that a portion be set aside to defray the expenses incurred in experimenting with new varieties of fruits and plants, both by testing already-established varieties from other States or the development of new ones in our own State, that we may be able to speak with assurance as to what will and what will not succeed. We would commend the Executive Board for its efforts in this direction, and would encourage them to a further prosecution of the work, not hesitating to use a reasonable amount of the funds for this purpose.

7. It has become evident from the discussions in our meetings, that many of the subjects here discussed should be learned while children. We would urge the importance of teaching horticulture and kindred branches in the common schools, and would suggest that appropriate resolutions be passed, and published in every newspaper in Kansas, and at an appropriate time that the Secretary have blank petitions circulated for signatures, asking the Legislature to enact such laws as will reach the desired end.

8. The action of this Society one year ago has been the means of filling scores of school-house grounds with trees, yet there are nearly five thousand yet remaining without tree or shrub to relieve the monotony of the scene. The school house should be made the pleasant spot of the neighborhood, and not like a prison-pen or a cattle-yard. All should realize that trees add vastly to the charms of school-house surroundings. Your committee are confident that the people of the State would gladly remedy these defects if their attention was called to the subject, therefore it is recommended that the Governor of the State be requested to issue a proclamation setting forth the importance of the subject, and appoint a day for the purpose of setting trees and shrubs in our school-house yards, calling said day arbor day, and that this shall be kept up from year to year.

PRESIDENT'S ADDRESS.

Many of the suggestions have been already mentioned in the foregoing remarks upon the Secretary's address.

1. It is our duty to give more attention to the nobler parts of the profession, and surround our homes with the pleasing and beautifying influence of ornamentals; and to a correct understanding of this subject, more attention should be given to landscape gardening; and that all may understand fully the scope of this subject, we would say it is the art of so arranging trees, plants and shrubs as to both render a pleasing effect, and cause a door-yard to look like a landscape, or in other words, in appearance to greatly multiply the size of the plat planted.

2. The material that citizens of other States can use is generally not adapted to our State, hence a careful study is necessary as to what is best suited to our needs; and in this connection it will be found, if sought out, that many varieties of native trees and plants by being native are inured to the peculiarities of our climate.

3. It would be well to have plans prepared, presented and discussed for the laying-out of grounds, both city lots and country seats, and in this connection we would suggest a standing committee on *Landscape Gardening*.

4. When we note the fast settling-up of the western part of the State, the great scarcity of fuel in that locality, as well as the very low percentage of area that is in trees of any kind, being only about 2½ per cent. average for the entire State; and when we take into consideration the climatic influences of extensive tree culture, the question of *forestry* becomes one of both fundamental and overshadowing importance. It is the Alpha and Omega of the horticulturist. It is said we "ask for blessings and obtain not, because we ask amiss;" so we plant and gain not, because we do not plant aright — and the reason we do not plant aright is, we lack the information. To a great extent we must depend upon our native trees, and are safest in planting that which succeeds nearest the locality in which we wish to plant; and we would recommend to the "*ad-interim* committee" that they divide the State into sub-districts, and ascertain the trees indigenous to each district, and publish the same for the benefit of planters, together with the results of any efforts made in planting in said districts.

5. We desire to do the work of no other society than our own, and should therefore spend no time in running after strange gods or familiar devils, by allowing any herd-law or fine-stock discussions, but confine ourselves strictly to horticulture in its broadest sense; and if we do this, we shall have plenty of work to occupy our hands.

6. The past work, although glorious in its results, is only the *alphabet* in the course. The planters of the near future — yes, even *now* we hear their approaching bugle-blasts — demand a knowledge of the science of the work, and it must be our place to furnish this food, or others more worthy and better qualified will step in and carry on the work. This Society should

map out a line of experiments reaching far beyond this generation, that our sons may enter into this work, and pursue its investigations, that through our efforts and theirs the great world may be benefited. So, buckle on your armor, and in the language of Grant to his soldiers at Donelson: "Soldiers! you have done a good day's work to-day. I thank you. You will do a better one *to-morrow*."

All of which is respectfully submitted, on behalf of the Committee.

GEO. Y. JOHNSON.

E. A. COLEMAN: Mr. President, I very much desired, at the time you delivered your annual address, to give utterance to a few sentiments awakened in my heart by the suggestions you offered therein, but the occasion would not permit me. By your consent, I hope to have an opportunity at this time.

(Consent was granted, and Mr. Coleman spoke as follows:)

Sir: In your address you alluded to "our homes and their beauties," and in so doing you struck a chord that vibrated through my whole being, even to my fingers-ends. It has been said by some one, that our language contains no sweeter word than "Home." Mr. President, I fear that a majority of the world know but very little of the realities of a home as it should be. Judging from my observations in the West during the past twenty-five years, I have sometimes thought that the highest conception of a home is barely a shelter from the cold blasts of winter, and the hot rays of a summer's sun. Such places I call ranches, and I now have in my mind quite a number of such ranches, which the owners call homes. These were built some fifteen to twenty years ago, upon the bare prairie, and are to-day as solitary abodes as when constructed. Some may have had an addition of a few boards, in the shape of a "lean-to," and others have tottered to the ground, and been replaced with comfortable dwellings—and that is all. Admitting the house to be comfortable, and its inmates provided with plenty to eat and to wear, does it make a happy home? Is there anything connected with such a place that carries to the mind of the absent son or daughter pleasant memories, and causes a yearning to return, save the one fact that Father and Mother "*stops*" there?

Mr. President, some two or three years ago I had occasion to visit a neighbor living upon one of those places I have called a ranch. He settled there in 1854. No trees, shrubs or climbing vines adorned the home-surroundings—no sweet-scented flowering plants filled the atmosphere with their fragrance—but the chip-yard, corn-crib, hog-pen and horse-lot constituted the main attractive features around that dwelling called home. The proprietor, knowing my love for horticultural pursuits, and the active part I had always taken for their promotion among all classes, questioned me about the different kinds of fruits, and how to grow them. In return, I asked the question, "What are *you* growing in the line of fruits?" His reply was, "Three peach trees constitute my outfit;" and, anticipating my surprise that so many years had passed in which he had done so little in that direction, he further said: "Since I have lived in Kansas I have had trouble enough to patch hell a mile!" Think, any of you within the hearing of my voice, that had this man studied the requirements of such a home as becomes attractive and pleasing, which renders the spirits of its inmates buoyant and cheering, and which excites our better and nobler sentiments to a love of all that is good in nature—had adorned his dwelling-grounds with beautiful lawns and trees, and the yards with roses and flowering plants, and his tables with the many varieties of luscious, health-giving fruits, imparting to all beneath his roof solid comfort and a happy contentment—think you, I say, that trouble would come to such a home in the manner and extent expressed in his sentence above given?

What makes *home* so dear to us after leaving it? Is it not the thousand-and-one recollections of its beautiful trees and flowers of all kinds—its lawns of green and the shady nooks—planted and grown by dear and loving parents, and shared with affectionate brothers and sisters? Home, ever dear; where we have reposed when weary, found relief when perplexed with cares of the world; where we join those we love, and to whom we are bound by ties as strong as life—sharers of our joys and sorrows. It is naught to us how sunny the skies of other climes, how fair the cities of other nations, or how majestic the scenery of other countries—we turn a fond and lingering look toward home, and exclaim in the beautiful words of the song, "*Be it ever so humble*, there's no place like home," if we but pattern after nature and nature's God.

J. W. Robson: I am an advocate of beautiful homes, and hope that every Kansan will take pride in making his home such.

RESOLUTION.

M. Allen, Hays City: I wish to offer the following resolution for the consideration of this body:

Resolved, That the Kansas delegation in Congress be respectfully requested to use all reasonable means to secure the Fort Hays and Harker military reservations, when abandoned as military posts, to the interests of agriculture, horticulture and forestry, as experimental stations.

On the motion to adopt, Mr. Allen said: It is well known that I live "away out on the plains," where about one-eighth of the land is held under the timber act of Congress, and the question of what to plant becomes one of the greatest importance, and requiring extensive practical information to secure success. These military reservations could and should be turned to the benefit of the masses settling in that portion of our State.

President: There is scarcely any subject more interesting to me, and should be to every true friend of Kansas, than this one; and I am ready to give this movement a hearty indorsement.

The resolution received the unanimous concurrence of the Society.

REPORT ON PEACHES.

BY H. E. VAN DEMAN, GENEVA.

This fruit is second in importance as a fruit for the people of Kansas. The apple of course stands first. The following are the principal reasons for placing the peach thus high in rank as a fruit: It is adapted to the climate, as there is perhaps not a county in the State in which it will not succeed; the southern counties are especially suitable to it, and as proof we might state that within the last ten years there have been seven reasonably good crops of this fruit.

It is easy to propagate the peach. The seeds are easily obtained, and anyone who knows enough to plant them in the fall can succeed in raising seedling varieties. A little knowledge of the art of budding will make it easy to have varieties of the *best* quality. It comes into bearing at an early age, and with ordinary care, fruit may be produced the third year from planting the seed.

The varieties prolong the ripening season during several months. By a proper selection we may have ripe fruit from June to October.

It is a fruit of good quality, and can be used in many ways. Everyone enjoys fresh ripe peaches, and they may be easily dried, or canned, or preserved in other ways for use during the entire year, and even kept from year to year.

It may be said to be the poor man's fruit, because a few peach seeds may be taken in the pioneer's wagon, and in a few years, with no cost except a little work, his family may be supplied with fruit.

The peach has been cultivated as a fruit for at least over two thousand years. The first mention we have of it is in ancient Chinese history. These writings speak of it in much the same way that the Bible speaks of the "Tree of Knowledge." The fruit was supposed to have the power to heal the sick when eaten, so these Chinese writings say. Pliny, the historian, also mentions it before the Christian era. He states that it was brought from Persia to Italy by the Romans, in the time of Claudius Cæsar. Its native home is supposed to be Persia and China. Hence the genus has been named *Persica,* and from the peach being the commonest species of the genus, is called *Persica vulgaris.* By most botanists the idea is considered erroneous, that the peach descended from the bitter almond, which is native of Asia Minor. The almond family is named *amygdalis,* and although there is considerable resemblance to the peach family, yet their characters are so different that they will not cross-fertilize. The peach does not flourish in England nor in continental Europe—not even in southern France, where the climate is very mild. In those countries, it is grown to a very limited extent in glass houses, and trained to walls. It was first introduced as a fruit for house culture, in England, in 1550. It was brought to America by settlers, about the year 1680—probably by the Quakers. Although the peach attains its highest perfection, both as to size and quality, in China, yet the United

States seems almost as suitable, judging from the fact that our varieties and specimens come next to the Chinese. In extent of cultivation, the United States exceeds the rest of the world in this fruit. A. J. Downing wrote, that although New Jersey, Maryland, Delaware and other Atlantic States afforded a good home for the peach, the Mississippi and Ohio valleys were better. Almost all good judges of fruit, who have eaten the peaches of California, think them even better than ours.

The peach tree flourishes best in a loose, rich and dry soil. By *dry*, I mean well underdrained, naturally or artificially. It will not live long in a wet soil. I could name several instances, besides one on my own place, in which peach trees were killed, last winter, wholly or in part, where the soil in one part of the orchard was inclined to be wet. As to location, the preference seems to be in favor of high situations. I well remember that in southern Ohio, when we had no peaches in the orchard about my home, there was almost sure to be a crop on the hills only a few miles distant. The peach orchard of Mr. Abner Allen, located on the Kansas river near Manhattan, was almost entirely destroyed by last winter's freezing, while other orchards on the hills, not more than a few miles distant, were only a little injured. The various theories deduced from these facts, it is perhaps not best to rehearse at this time. For practical use, it is enough to know that to insure success so far as the growth of the peach tree may depend on the soil and location, we must have soil of reasonable richness in decayed or decaying organic matter, and by all means not too dry or too wet, and if possible located on an elevated situation. Perhaps as plain a description of proper soil would be to say, *one that will raise a good crop of corn nine years out of ten, as Kansas seasons run.* If the soil is not wet, manure will materially aid the peach grower, even where the soil is quite fertile. An underdrain laid in wet places, even if it is a cheap one, will also add greatly to the growth and hardiness of the trees.

For the sake of some who may wish to hear another's experience related, I will briefly give my

METHOD OF RAISING AND PLANTING PEACH TREES.

The best seeds that I have found are from the common seedling trees of the country. They are not so liable to be imperfect as those from some kinds of fine peaches. If possible, I do not permit them to get dry after they are taken from the fruit. As good a way as most persons can follow is to put them in a pile on the ground, immediately on the north side of some building, stone fence, or bushes that make a dense shade, and keep them covered with a piece of old carpet, or some such thing, until the peach season is over. This will be about Oct. 15th. I have planted them in the nursery-row at once, but any time before the ground freezes is as good, provided the seeds are kept moist. But on one occasion very few of them came up when so planted, because of the extreme dryness of the soil during the winter. I have had equally as good success in "bedding out" the seeds. That is, instead of planting in the fall I spread them on the ground about two layers deep and cover with about two or three inches of soil. Some think it necessary *to freeze* the seeds, to cause them to start. This is not a fact, for I have known them to germinate freely when not frozen, but merely kept moist. We may also reason the matter from the fact that peaches flourish and reproduce in climates where it never freezes. *But moisture is essential.* Some persons succeed admirably by keeping them over winter in a box, or keg, or barrel, mixed with about an equal amount of sawdust or sand, and kept moist. If kept dry over winter and planted in spring, they will very rarely germinate that year, but generally come up the next. The reason of this is chiefly, or perhaps entirely, that the "*glue*," as we may call it, fastening the two halves of the seed together, must be dissolved before the kernel can absorb sufficient moisture to induce germination or the stony shell be opened. Although I have heard it recommended, yet I have never succeeded in sprouting kernels that were taken from the stones by cracking in the spring, both when they had been kept somewhat moist and kept dry during the winter. Perhaps injury to the delicate brown covering of the embryo was the cause, but it is to me somewhat of a mystery, for no injury to the kernel could be noticed in thousands of cases. The seeds should be planted in spring as soon as they are noticed to begin to sprout, which is very soon after the frost leaves the ground, and is usually the last of March or 1st of April, in Kansas. The ground should be well plowed, whether planted in fall or spring, and very shallow furrows made three or four feet apart, with a small plow or by hand, or with a hoe if only a few seeds are to be planted. The seeds should be dropped some two inches apart, and if the most of them sprout the plants should be thinned to four inches.

No pains should be spared to keep all weeds from growing, and the ground loose. If this is neglected, the "stocks," by budding time, will be small and hard to bud, and less likely to "take" the buds. If properly cared for,

BUDDING

May be begun by the first or middle of August. The stocks should not be less in size than a lead pencil or larger than twice that size. In good soil they will often be larger if not thickly planted, and as they are no better than medium sized-ones, judgment should be used in the thickness of planting the seeds. The process of budding is no doubt well enough understood to be passed in this paper. If not, the novice should go to some experienced budder and learn. There is also a mode practiced called "June budding," which differs from the common way merely in being done as early in the season as buds can be found near enough maturity to bear removal safely (usually not until July here, I find), and being forced into growth the same season so as to make a budded tree that year. This also will, with its peculiar treatment, be omitted.

Provided you or some near neighbor have trees of the desired kinds to bud from, there need be little danger of failure to bud successfully in an ordinary season. However, one must know the proper condition of the stocks and buds, or failure may result, even with skilled hands and in the midst of the budding season. The stocks and buds should both be in a vigorous state of action of the sap. It sometimes occurs that there is too ready a flow of sap, and the inserted buds are "flooded," or "drowned," as some say. This rarely occurs after the terminal buds are found on the branches of a bearing tree. Cut such branches from bearing trees or from those in the nursery. The latter are generally preferred, as being more easily handled and less abundant in fruit buds. This latter makes no difference, however, if one can distinguish a fruit bud from one that will make a branch. This can be told by the shape of a fruit bud being more blunt or rounded on the point, and usually larger. Fruit buds rarely occur singly in the peach at the base of the leaf, but in company with a branch bud at one side, or with a fruit bud on each side of the branch bud. There are also what I call "*blanks*," that is, leaves at whose base there are no buds. These nearly always occur together, and about two, three, four and five, counting from the tip of the shoot. As soon as cut from the tree, the leaves should be cut off close to the bud. These branches so prepared are then called "*sticks*," and should be carefully labeled and kept damp and cool. With such treatment they will remain in good condition for weeks. The good condition of the stocks may be told by their readiness to peel or "run" easily. When there is the least sign of the bark adhering to the wood so as to tear little splinters or particles from the bark, it is useless to try to bud. It often happens that during a dry spell the bark will not peel readily, and after a rain the sap will flow freely and budding may be done. Any time before the bark begins to stick to the wood, which usually occurs a week or two before frost, will do. But for safety begin early, and if need be re-bud those that have not taken, as soon as that can be determined. Be sure to most effectually stake-label and record each variety in a book.

REARING THE TREES IN THE NURSERY

Is comparatively easy. As soon as the first signs of growth of the buds set occurs the next spring—and which is often earlier than many suspect—the stocks should be cut off with a sharp knife, at an angle of forty to fifty degrees, beginning on the opposite side from the bud and coming out one-fourth of an inch above it. Every sprout should be persistently rubbed off except that from the bud. Sprouting will need to be done about twice in the early part of the season. Two cultivations will usually be enough to keep down the weeds. Late growth is not desirable. By fall the trees will be ready to set in

THE ORCHARD.

When mild winters follow, fall setting does very well, but in Kansas I have found that spring is generally the best time to plant peach trees. My distance to set apart is one rod—a foot or two more or less is good enough. I want to plant my trees in good orthodox style. This I consider is, to have holes or furrows deep enough to hold all the roots in a natural position, and after "puddling" the roots—that is, dipping them in a sloppy mud-puddle prepared for the purpose—put them in the place prepared, and pack loose but not wet soil *firmly* among and over them. On the top put loose soil *not* packed or tramped. Cut off every side branch close to the main stalk, and cut that off from twenty inches to three feet from the ground. This last proceeding I think almost essential to a good growth the first year, and in many cases the life of the tree depends upon it. Keep off all shoots coming out lower than one foot above ground, and have them branch from all sides to the top of the stalk. As the crotches of the peach tree split very easily, great care should be taken when the branches are forming that forks are not made which will be liable to split when the tree becomes large. If it were not for the necessity of pruning in transplanting, it would be better to let the branches form after their own natural way, in which case they would very rarely break in the crotch. Indeed, I would do very little pruning during the entire life of the tree, and only then to remove broken or distorted branches. However, when peach trees become very old and look as if they were about to die of old age, it is a good plan to cut the branches off some three to six feet from the ground during the spring months, and thus cause a new set of vigorous branches which will perhaps bear another crop or two before the trees die.

I would recommend cultivation of the soil every year, as the trees keep more healthy and bear better fruit. Borers will need attention every year. My plan is to examine about the collar of the tree very carefully during September or October, and kill them with a knife. Do not depend on patent washes or "insect medicines" of any kind.

To persons of experience, it is scarcely worth while to say that it very rarely pays to plant seedling varieties of the peach. It is true that all the improvement we have made in varieties we owe to the production of new seedlings, but as those of superior value are rarely produced, it is not wise to depend on them for trees for the orchard. It costs no more to grow a good variety than a poor one, and one crop will far more than pay for the extra cost of good budded trees. If I was not able to buy them at once, I would raise them. Buds of good kinds may be had of some neighbor, or procured from any distant part of the country by mail. Any one may learn to bud, and a little extra time and trouble spent will yield large returns in the shape of superior fruit. As to

VARIETIES,

Everyone may have different ideas, but there is such a large list of good ones to choose from, that one can hardly fail to get a good selection. Of course, care should be used in selecting such as will ripen in succession from very early to very late. This can only be done from experience or close study. The reports of this Society contain lists which may be depended on for Kansas. I will give such a one as suits me very well according to my knowledge of varieties, that have proved themselves of the greatest value in southern Kansas, and in their order of ripening: Alexander, Early Beatrice, Early Louise, Hale's Early, Troth's Early Red, Large Early York, Old Mixon Free, Yellow Rareripe, Red Indian Cling, Stump-the-World, Crawford's Late, Morris's White, Heath Cling, Steadly. We might add many more valuable kinds, but these are tried, and will give a succession of ripe fruit during the entire peach season. It is also necessary that a few young trees should be planted every year or two, if we expect to have a constant supply of this delicious fruit.

Adjourned.

THURSDAY EVENING.

President Gale in the chair. Exercises opened with music.

FINAL RESOLUTIONS.

Committee on Final Resolutions made the following report:

Resolved, That we, the members of the Kansas State Horticultural Society, do hereby express our sincere thanks to the Jackson County Horticultural Society, and the citizens of Holton and vicinity, for their generous and hospitable treatment during this meeting.

Resolved, That we heartily express our thanks to Dr. V. V. Adamson, the esteemed and worthy Secretary of said county society, for his unceasing efforts to make this meeting a success, and in providing for the comforts of the visitors from abroad.

Resolved, That our earnest and special thanks are here expressed to Mrs. M. Scott and S. E. Chase, organists, Mrs. Dr. Scott, Misses Nellie Coffin, Katie Golder, Marietta Golder, Mary Dibble, Mamie Chase, Messrs. J. C. Chase, M. Sarbach, R. B. Quay, and Dr. Graham, for having so kindly enlivened our meetings with music.

Resolved, That our thanks are hereby tendered to the several railway companies, viz., Kansas Pacific, M. K. & T., Kansas Central, K. C. L. & S., K. C. Ft. S. & G., and A. T. & S. F., for special favors extended to our members.

Resolved, That the Secretary furnish copies of these resolutions to the Holton *Signal,* Holton *Recorder,* and Holton *Bee,* for publication, and to the general offices of the railways herein named.

Resolved, That the thanks of this Society be tendered to Miss Selina M. Roby and Mrs. O. E. Stout, of Holton, and Miss Mary E. Murtfeldt, of St. Louis, for their able, interesting and practical papers on botany and entomology; also, to Rev. D. W. Havens, D.D., of Holton, for his able and eloquent paper delivered before this Society.

F. Wellhouse,
E. A. Coleman,
J. W. Robson,
Committee.

On motion, the report was adopted.

Judge Neuman called attention to the existence of the Missouri Valley Horticultural Society, and stated that the society had expressed a desire to meet and coöperate with the Kansas State Society.

On motion of F. Wellhouse, an invitation was extended to that society, for the purposes stated by Judge Newman.

CHERRY CULTURE.

The Secretary was called for, and said: The Early Richmond cherry is the only one out of some twenty varieties that I have tested which has proven profitable. Prefer the common Morello sprout as a stock on which to grow the cherry. Plant 10x20 feet, with a view of removing every other tree in the close-planted row as soon as they interfere, leaving the trees 20x20 feet each way. The Early Richmond is a profuse bearer, and the tree becomes exhausted and stunted by repeated crops, unless thoroughly cultivated and heavily manured. Cherry trees should be planted very early in spring-time.

In response to a special invitation, the following address was delivered:

HAPPINESS IN RURAL LIFE.

BY CHAS. W. MURTFELDT, KIRKWOOD, MO.

The palladium of our liberty declares that every man is possessed "of certain inalienable rights, and among these are life, liberty and the pursuit of happiness!" Be not alarmed, my friends; I am not inclined to inflict on you a political harangue, albeit the voice of "the boom" is heard in the land, and the Presidential election draweth nigh! Such meetings as the one in progress here furnish neither the occasion nor the matter for political speeches. The well-known quotation indulged in will furnish the subject, or a sort of motto, for a few, I hope not unprofitable, reflections.

The Pursuit of Happiness. Happiness we may fancy is here represented as a coy maiden, and, like Atalanta, fleet of foot. If we wish to possess her we must pursue her. Happy for man that, in a certain sense, there are many ways that lead us to her bowers. She dwells in the palaces of the rich — sometimes. In the homes of men in the humbler walks of life more frequently; yea, often in the rude hut of the pioneer; in woody mountain or on prairie plain or amid rocky cliffs.

Riches! Who is rich? That depends very much upon the gauge by which we judge. For instance, the standard of riches of the Astors, the Vanderbilts, the Rothschilds and the Goulds differs greatly from the standard of the Browns, the Joneses and the Smiths, who labor perchance in the shop, or at the forge, or on the farm, or in the nursery. That which the physical man can enjoy differs only in kind and degree. The bread of the rich may be a trifle whiter and the butter may be "gilt edge;" their beef nicely marbled and roasted to a turn by a French cook, etc. But cannot every farmer who produces *all*, have these things equal to the best, enjoy these also? And then he has this in addition, and better than many of the rich: these frequently suffer from surfeit, dyspepsia and indigestion, and are troubled with nightmare and ugly dreams, but "the sleep of the laboring man is sweet, whether he eat much or little."

In further explanation, allow me to relate a fact: Wm. B. Astor, the son of John Jacob Astor, for many years known as the richest man in New York and in the United States, made the following remarks to a gentleman who congratulated him on his great possessions. Said he: "I come here to my office at nine o'clock in the morning and find a small army of carpenters, masons, painters and all kinds of mechanics waiting for orders or instructions, or seeking employment or contracts. To these I must give audience! Next come my collectors with the everlasting rent-rolls and unceasing complaints about tenants unable or unwilling to pay, or of such as have taken 'French leave' and cannot be found. After some hours of figuring and giving orders, these are dismissed. Fifteen or perhaps twenty minutes are devoted to lunch; correspondence, bank accounts and other matters take up my time until five o'clock P. M., when I am thoroughly tired out and go home to dinner. Now," said Mr. Astor, "how would you like to do all this just for your board and clothing? Well, that is all I get;" and as far as the physical man is concerned he was truthful. My hearers will please bear in mind that the great wealth of the Astors was accumulated in the fur trade, but was very greatly enhanced by being invested in leases of real estate running ninety and nine years, and belonging to the Trinity (Episcopal) Church, New York. By the way, these leases have all now expired, I believe.

Wm. B. Astor in his life-time may have been a very happy man, but if he was, he found his happiness in the variety and multiplicity of labor and hard brain-work, the latter being quite as exhausting as the use and exercise of muscle. It is not denied that the Astors, in common with all rich men, have almost unlimited opportunities to do good, to relieve suffering and to encourage worthy industries; but, history furnishes us very few data of any great efforts in this direction!

Having considered riches as a fountain of happiness, let us look at another and greatly-sought source, viz.: fame, ambition and power. Men in public life may be happy, but how fickle is fame? To-day on the very pinnacle of power, to-morrow scorned and forgotten. This has even passed into a proverb, "Uneasy lies the head that wears a crown." Position, office and emoluments depending on the will of earthly monarchs, or, as in our country, on the good-will of the voters, (not to mention the power behind the throne,) or upon the success of party, are very insecure and uncertain; certainly politicians have their ups and downs, and among them there are the "ins and the outs." Very frequently they have only Hobson's choice, "they will be damned if they do, and they will be damned if they don't!" Some men are never so happy as when engaged in word-battle; they are fond of cutting repartee, and hesitate not to use the keen blades of sarcasm and philippics; all such may feel and be happy, but if they are, their peculiar kind of happiness has no attraction for me. Has it for you, my hearers? "Man heapeth to himself riches, and he knows not who shall gather them; they take unto themselves wings and fly away." "And the glory of man is as the flower of the field: the wind passeth over it, and it is gone forever." How wise and good is Providence in constituting us to differ in our aspirations; if we were all of the same mind in regard to our worldly callings, perhaps none of us would be happy here.

You, for instance, have come to Kansas to pursue happiness in the beautiful and quiet scenes of country life. You have set your mark high, I hope, and you will be satisfied with nothing short of your ideal. You mean to be, and no doubt will be, the happy possessors of beautiful farms; stocked with the finest and fleetest of horses, with the most thorough-bred and satin-coated cattle; with the heaviest-fleeced and broadest-backed sheep, and with the fattest and most prolific of yellow-legged chickens; you, who are present here to-day, and all your sisters, cousins and aunts, who may not be here, mean also to have chaste and beautiful homesteads. You hope to enjoy the fruits of your orchards, your vines and your berry patches. You mean to cultivate the flowers, shrubs, evergreen and ornamental trees which can be grown in this latitude. I said you mean to have all this; pardon me, I hope you possess this already, or if not, allow me to say that all this is within your reach.

It is quite possible that at these meetings you may receive some hints which will enable you without much expense to add much to your comfort and happiness; I most sincerely hope you may.

The fact is, my friends, that every man, within certain limits, is the architect of his own fortune, and, consequently, the custodian of his own happiness. Allow me briefly to refer to my own experience. Having spent about twenty-five years of my manhood on a farm in northern Illinois, I can fully enter into the motives which brought you to Kansas, and know the road by which you mean to overtake the coy maiden already referred to. I have found a good deal of hard labor and many disappointments, which are the common lot of our race, but notwithstanding all these, by far the purest joys, the highest aspirations to excel as a farmer and the most unalloyed happiness I have experienced and enjoyed during my life on a farm! Very true it is that all our happiness here is transient, and that sometimes we are tempted to adopt as our own the words of the wise man: "I have builded houses and planted vineyards and orchards, and all is vanity and vexation of spirit."

I have not the disposition nor yet the ability to lecture on this subject, and yet I hope for pardon if my paper has or shall assume somewhat of a lecture spirit. In planning the adornments and utilities of our homes we must and should lose sight of self, in a certain degree. I have no patience with the spirit of a man who says: "I am well stricken in years, my days will be few at longest; why should I trouble myself to plant fruit trees? I'll never live to see them bear, nor can I hope to pluck and eat of their fruit." Such a spirit is the essence of selfishness. Suppose such a disposition had pervaded our forefathers just before our advent in life, where would we have found the sweet cherries, the rosy-cheeked apples and the luscious pears we enjoyed so much when we were boys—yes, do yet. I do—don't you? If, therefore, we wish to do our duty to those near and dear to us, to the community in which we live, and to the State which protects us, we should plant trees and shrubs and flowers, no matter if we ourselves are not permitted to taste of the fruit or to inhale their fragrance.

If we do not, others will; their gain will be our loss. Some years ago, through the kindness of Major Downs, Superintendent of the Central Branch of the Union Pacific Railroad, the members of the Missouri State Board of Agriculture, with those of Kansas, were permitted to travel from Atchison to Waterville, in this State, the then western terminus of the road. On that occasion we were entertained for a little at Blue Rapids, and among the first things as worthy of note we were informed that the citizens of that beautiful town had planted in their streets, that same year, *seven thousand* shade trees.

In one of the most beautiful and desirable suburbs of St. Louis, where is my present home, we early last spring formed a "village improvement society," and at present, with previous efforts, both public and private, we have planted and *growing* on the streets and avenues of Kirkwood, about fifteen hundred shade trees, mostly elms and maples, and our lots and yards and gardens are studded all over with evergreens, shade and ornamental trees, and shrubs and flowers, and we think it a good investment. Children growing up under such surroundings, if otherwise well and judiciously trained, can never divest themselves entirely of the influences which surrounded them in their youth, and they will "rise up and call blessed" all that aided and abetted in this labor of love. And so it will be here, my friends, if you do your duty. Will you do it?

What I would say to you, then, on this occasion, is that human happiness is the result of a consciousness that we have done our whole duty to our fellow-man; to those near and dear to us, who naturally look to us for protection and care and are dependent upon us for their enjoyments, and to ourselves! In order to have all that is within our reach, of this happiness, we must be diligent in making our homes pleasant and cheerful, fit to be the holiest of holies to ourselves and our dear ones, and to the friends we would invite into their holy precincts. Even a hut by the railroad track, if a snowy curtain shades its window and a vine overshadows its portal, a bit of green sward and a few flowers adorn its approaches, and if only a bit of rag carpet be placed by the bedside, can be the abode of happiness, enjoyment and peace.

I have thought it singular sometimes, and yet it is not really so, that the editors of our dailies or magazines or our essayists should almost with one consent describe the acme of human happiness as being enjoyed in the country. The bliss so much coveted by city people, and by others anxious to reside in the city, consists largely in the tinsel and glitter of fashion and wealth, and in the rush after amusements and the honors of position and worldly fame. To the purer joys of country life, of quiet meditation and of looking through nature up to nature's God, most of the denizens of the crowded cities are strangers!

In conclusion, and in confirmation of what I have just offered for your thoughtful consideration, allow me to quote a paragraph from the Philadelphia *Record:*

"Happiness is the grand aim of life, and to secure its fullest blessings we must cultivate the mind and all the graces of the spirit. We always associate leisure, innocence and peace, with rural life, combined with the kindred joys which contentment and competence bring. Almost our first thought of a country home is one of pure air, green earth, gentle breezes laden with the breath of many flowers and whispering pleasure, and where every shade promises cool and sweet repose. The thought of a rural home is full of promises of the fond ideal and of cherished meditation. Every person of sentiment reverts to the country with pleasant anticipations; *it is a feeling inbred in our very natures.* Fields, meadows and groves, singing birds and fragrant flowers, running brooks and grazing herds, are ever the delight of mankind.

"Money-making is not one of the incentives of a country residence upon which a practical or a sensible man builds ardent hopes; nor does a man of sound judgment seek a country home upon which to foolishly squander the fortune his industry and his economy have enabled him to accumulate through years of toil and sacrifice and self-denial; but it is the place where he can realize the cherished tastes of cultivated thought, refinement and study—the place where his fond ideals, long anticipated, become the real enjoyments of rational realities—the quiet abode of retirement and domestic ease—the place of rest—the place where the altar is sacred to the affections, and where love radiantly reigns supreme, and peace spreads over the frugal board, and joy is reflected from face to face, making home happy; where freedom and independence proclaim the man king, the woman queen, and their darlings princes and princesses in this rural kingdom. Here the greatest fortune is the wealth of domestic affections, and the sweetest sounds the cadences of loving hearts; it is the bower of retirement, and *the home* of the family.

"Our rural homes should be as beautiful as our purses and tastes will enable us to make them. If our means have provided ample space for a comfortable house, it should be surrounded by lawn and ornamental grounds, planted with fruit and shade trees, shrubs and flowers; a well-appointed garden filled with the choicest vegetables for the use of the family; and if our resources and tastes permit us to keep a horse, we ought by all means to keep a cow, as the care of keeping both will add but little to a man's labor who cares for the grounds and the garden. If the family is large, and horses are kept, a good cow will be a comfort and a pleasant feature of the place at but little expense. . . . How much of the happiness of rural life depends upon the care bestowed upon the house, the grounds, the garden, the fruit, the flowers, the horse, the cow and the birds, by ourselves, can only be estimated by him who has bestowed that care and who reaps the pleasure flowing therefrom."

Thus writes the *Record*, and advises city people to go about establishing a rural home, and all the inducements held out are certainly within reach of every one within the sound of my voice. Although I have some doubt whether I am addressing a single retired merchant or banker, if such a one is here, may I be allowed to congratulate him on his happy condition. Let us sing with Whittier:

"Give fools their gold and knaves their power,
  Let fortune's bubbles rise and fall;
Who sows a field, or trains a flower,
  Or plants a tree, is more than all.

"For he who blesses most is blest;
  And God and man shall own his worth
Who toils to leave at his bequest
  An added beauty to the earth.

"And soon or late to all that sow
The time of harvest shall be given;
The flowers shall bloom, the fruit shall grow,
If not on earth, at last in heaven!"

Allow me to conclude this little offering of mine with the closing sentence of President Marshall P. Wilder's last address to the American Pomological Society:

"May the success of the past cheer and stimulate you to greater exertions in the future, and although you may not live to reap the rich harvest which you are now planting, your children and your children's children shall rejoice in the result of your labor long after you shall have passed over the river to those celestial fields —

"'Where the verdure of spring-time forever shall reign,
And the perfume of flowers float o'er the bright plain,
Where the noontide of summer and autumn shall blend
In the harvest of fruits that never shall end.'"

RESOLUTIONS OF THANKS.

The following resolutions were offered by G. Y. Johnson, Lawrence:

Resolved, That the thanks of this Society are due, and hereby expressed, to the members of the State Legislature, for the liberal appropriations made during their last session to the funds of this Society, for the furtherance of its work.

Resolved, That special thanks are hereby formally expressed to his Excellency Gov. J. P. St. John, for his special message to the State Legislature during its late session, favoring an appropriation of State funds to this Society for the furtherance of its work.

On motion, the foregoing resolutions were unanimously adopted.

RESOLUTION ON HORTICULTURAL STATISTICS.

(Offered by G. Y. Johnson, Lawrence.)

Resolved, That the Executive Board of this Society be requested to prepare a list of questions, of a horticultural character, and submit the same to the Government Census Bureau, at Washington, D. C., and ask that statistics relative thereto be gathered for the next census report.

REPORT OF COMMITTEE ON FRUIT EXHIBITED DURING MEETING.

Your committee beg leave to submit the following report:

APPLES.

We find the total number of varieties on the tables, 23, viz.: Rawles Genet, Ben. Davis, White Winter Pearmain, Winesap, Willow Twig, Gilpin, Missouri Pippin, White Pippin, Yellow Newtown Pippin, Limber Twig, Lawver, Yellow Bellflower, McAfee's Nonsuch, Rome Beauty, Huntsman's Favorite, Smith's Cider, Red Winter Pearmain, Grimes's Golden, Fallawater, Fall Winesap, Sweet Romanite, Black Warrior, and a plate of seedlings by G. C. Brackett, from the orchard of Hon. S. A. Riggs, near Lawrence, worthy of attention. Four seedlings from Dr. Howsley's orchard, near Leavenworth, of medium size, which indicate keeping qualities.

CONTRIBUTORS.

Jacob Hixon, Jefferson county, seven varieties; E. Coleman, Jefferson county, three varieties; J. R. Hagerty, Jefferson county, one variety; Abner Allen, Wabaunsee county, six varieties; E. A. Coleman, Douglas county, twelve varieties; G. C. Brackett, Douglas county, seven varieties; N. P. Deming, Douglas county, six varieties; Lyon County Horticultural Society, three varieties. The collection grades, in size and perfection, below the exhibits of prior years, with the exception of the Winesap and Lawver. Another exception we note is the fairness of the White Winter Pearmain, which of late years has been so inclined to scab — an encouragement to the acquaintances of this fine variety to hope that its quality of former days may be restored in the future. Notable in this collection is the plate of highly-colored Rawles Genets, exhibited by G. C. Brackett, of Lawrence, which coloring was obtained by artificial methods; also the contribution of E. A. Coleman, near Lawrence, is highly colored in comparison with the general display. Your committee call attention to this feature of high color, believing that it has much to do with the flavor of fruit and its market value.

E. J. HOLMAN, Ch'n,
E. A. POPENOE,
ABNER ALLEN,
Committee.

OUR SUMMER FLOWERS.

BY J. W. ROBSON, CHEEVER.

In our humble opinion, there is nothing that grows on this earth that seems to yield such peaceful and lasting pleasure as the acquirement of a genuine and enthusiastic love for flowers of all kinds. There is something really wonderful in the constancy of the flower-lover, and something exalting in their influence upon those who *love* and care for flowers for their own sakes. The question often arises in our mind, now that we have entered our "three score and ten"— the limit assigned to the age of man — how is it that we find such sweet content and serene happiness in the pursuits of floriculture, while the great mass of our fellow-men around us are uneasy and dissatisfied with their lot? Is it their endless variety of form, size and color, as well as the time of their coming and going, that makes the annual visits of these quiet friends never tiring? Is it because a loving Father has pressed them upon our notice, by scattering them on every hill-top, upland, and prairie, planting them in dells and sequestered nooks, and spreading them in the valleys, like a gorgeous carpet beneath our feet, thus giving throughout the circling year daily manifestations of his favor and love, and sweet glimpses of good things to come? For each plant moves in its own pathway, passing through the glories of spring, and summer, and autumn, closing with the winter decline and sleep, but to reappear again and again in the vernal resurrection. Those very brief verses in Genesis, which give us so much of the Old World's vast history, condensed in so few lines — are we to understand by them, when they describe Adam's life and work in a garden, that his race owes its superiority over the other races of men adverted to in the same book, because of having learned to till and keep a garden, and to live quiet and harmless, yet actively-busy and observant lives?

The pursuit of floriculture is the path of safety for the youth of the present day, and we often wish that our spiritual instructors would imitate the teachings of the "Great Teacher who spoke so lovingly of the verdant grass, and "the lilies of the field." And yet more so, the teachers in our public schools should guide, at an early age, the inclination and tastes of all children to the employments and pleasures of the garden, giving daily practical instructions in this first of all arts, the one upon which all the glory, the happiness and the strength of our race are founded. Then, but not till then, will they recover the Eden that was lost.

The months of May, June and July are the hey-day of hardy, herbaceous plants, and hardy flowering shrubs. Their numbers are so large, and the claims of each upon our attention are so imperative, that we have not time or space to notice them all; and while we present only the cream of our old favorites, it must not be supposed that we have discarded the rest.

Aquilegia canadensis and *A. chrysantha* are the finest of all known Columbines. The latter is pure yellow, and continues blooming long after the other species have shed their blossoms.

Campanula carpathica and *C. rotundifolia*, with their pretty blue, bell-shaped flowers, are equally at home on the rockery or in the garden border.

Viola cornuta. In rich, moist loam this pretty blue violet blooms unceasingly from June till October.

Penstemon barbatus and *P. argutus.* The former has panicles of drooping, scarlet flowers, the latter a profusion of purple flowers. Both are fine border plants.

Delphinum formosum, D. Hendersonii, both deep blue, and *D. nudicale,* red, are among the finest of our larkspurs.

Cockle, (*Lychnis chalcedonica,*) an old-fashioned showy flower; the scarlet variety is the best.

Day Lily, (*Funkia ovata* and *Hemerocallis fulva,*) should have a place in every collection. The blossoms of each are freely borne for a great length of time.

Double Hollyhocks deserve a place in every garden. For ornamental purposes the intensely-colored varieties are most appropriate.

Bear-grass, (*Yucca filamentosa,*) is a noble plant, and deserves to become common. It has a tall, tree-like flower, stem laden with yellowish-white blooms.

Callirrhoe involucrata—A native procumbent and spreading plant, with a great profusion of showy crimson flowers. Is so beautiful that if it was a native of Japan, we would see it in every door-yard.

Loose Strife, (*Lythum roseum superbum*)—A remarkably showy plant, with beautiful long spikes of beautiful pink flowers; continues in bloom for months.

Sweet William, (*Dianthus barbatus.*) This old favorite has always been popular, and ought to be more so, now that the old varieties are so much improved. For garden decoration, it stands without a rival during the month of June.

Meadow Sweet, (*Spireæ venusta, S. ulmaria, S. ulmaria rosea,* and *S. chincusis,*) are all handsome and pretty, and last a long time.

Aschillea millifolium roseum is decidedly the best of all the species for decorative purposes.

The Peonies are all beautiful flowers, perfectly hardy. The double white, red and crimson are very fine. They flower early in the season, and fill up the void between the spring flowers and the roses.

Snap Dragon, (*Antirrhinum Majus,*) will grow in any soil. The dark and intensely-colored varieties are the strongest growers, and the best bloomers. By a little cutting-out now and then of seed-bearing stems, the plants will bloom unceasingly from June till October.

This list of hardy herbaceous plants is by no means complete, still it contains some of the finest and most easily cultivated of this class of flowers.

Chief among hardy shrubs that flower during summer are, *Syringa, Philadelphus-grandiflora,* and *P. coronarius,* with snow-white flowers in great profusion. The last named has sweet-scented flowers.

Spiræa Douglasii has dense terminal panicles of rosy-pink flowers; *S. callosa,* with thick corymbs, of pinkish blooms; *S. Menziesii* is not unlike *Douglasii,* only more profuse; *S. corymbosa* has showy compound corymbs of white flowers. *S. prunifolia* is our favorite of the whole genus. Its white double flowers, which it produces in great abundance, look like miniature daisies. It has intensely green foliage, which adds much to its handsome appearance.

Sweet-scented Shrub, (*Calycanthus floridus.*) The sweet shrub of our mother's garden; the flower is deliciously sweet, is a very dark purple, and it remains a long time in bloom.

Deutzia scabra, D. crenata, and *D. crenata fl. pl.,* are very desirable shrubs. They are very hardy, profuse bloomers and strong growers.

Viburnum opolus. The Guelder Rose of our youthful days; known now as the Snowball. A well-known and popular shrub, covered with masses of large white balls; during the month of June it presents a striking appearance.

Purple Fringe, (*Chionanthus virginica.*) Like the preceding, found in ancient gardens. Betram, the first and perhaps the most enthusiastic botanist America ever produced, first introduced it to Europe, where it excited quite a furor. It has always been a favorite in this country, under the name of Purple Fringe.

Wiegelia rosea, W. amabilis, and *W. hortensis nivea.* A beautiful class of shrubs; foliage large, vigorous growth, and profuse bloomers.

Trumpet Honeysuckle, (*Lonicera sempervirens.*) A twining shrub, distinguished by its large heads of scarlet, trumpet-shaped flowers. It is perfectly hardy, and blooms in great abundance from June till October.

Honey-suckles, (*Lonicera halliana* and *L. belgiaca,*) are very fragrant flowers. They bloom from June till November.

Trumpet Flower, (*Tecoma bignonioides.*) This vine climbs by rootlets; has fine foliage, a rapid grower, with large, scarlet, trumpet-shaped flowers.

But the crowning floral glory of the summer months is the *rose*—a shrub that can now be obtained so cheaply that it is within the reach of the poorest tiller of the soil, and so easily cultivated that the merest tyro need not be afraid to undertake its cultivation. Last June we visited two dear friends who devote their spare hours to the culture of flowers. Early in the morning, just as the first faint streaks of light limned the eastern horizon, we entered the door-yard, and there spread out before us we saw the finest collection of hardy ornamental flora we ever beheld in western Kansas. On each side of a pathway grew a collection of summer roses, composed of some of the best varieties of the different classes. At the end of the path, in an oval bed, grew a rich display of double peonies; to the right of this stood a clump of hybrid perpetuals; on the *wee bit* of a lawn in front of the dwelling, on each side of the path leading to the front door, were two beds, one filled with Tea and Noisette, the other with Tea and Bourbon roses. The porch was covered with climbing roses and twining honeysuckles, in full bloom. In a small basin fountain grew a superb specimen of America's noblest and finest *aquatic*, the Water Lily, (*Nympheœ odorata.*) Radiating from this basin, eight beds of verbenas of different shades of color, each bed of one color, greeted the eye—the rest of the space filled with clumps of hardy flowering shrubs and hardy fragrant twiners, whose aroma filled the air. Round the corner, at the northern end of the house, grew a number of pretty ferns of curious forms, and some of the most attractive of our native wild flowers, which love shady nooks and moist places in the vicinity of our rivers. When leaving for home, our flower-loving hostess presented us with a rich bouquet of rose-buds, and we did not the less appreciate the gift because the hand that bestowed it was slightly bronzed by exposure in the sunlight and wind, while cultivating these floral gems.

Lovers of the curious in form should plant the Dutchman's Pipe, (*Aristolochia sipho,*) a hardy vine with fine foliage, and brown flowers, resembling in shape a miniature pipe or siphon.

It is a source of pleasure to us to note that the taste for plants and flowering shrubs is yearly increasing in this young State. Their culture brings the best and purest forms of loveliness clustering around our homes; and they grow so easily, and are of such a vigorous and hardy nature, that they do not cost us much to procure, or to keep them. Hardy herbaceous plants, planted in borders, and shrubs in clumps, produce a beautiful effect, and once planted, require but little care for many years to come.

FLOWERS IN WINTER.

BY MARY L. MACY, LAWRENCE.

"Strange there should be found,
Who, self-imprisoned in their proud saloons,
Renounce the odors of the open field
For the unscented fictions of the loom;
Who, satisfied with only penciled scenes,
Prefer, to the performance of a God,
The inferior wonders of an artist's hand.
Lovely, indeed, the mimic works of art,
But Nature works far lovelier:
Beneath the open sky she spreads the feast,
'Tis free to all—'tis every day renewed;
Who scorns it, starves deservedly at home."

Art may do much, but nature may do vastly more. There is surely something fictitious and radically wrong in the taste which can admire the mimic and disregard the real picture of nature—just as there is in the sympathy which weeps over distress in romance, and turns with loathing from it in real life. The poor who have formed a taste for nature, need scarcely repine that they want a palace or a picture gallery; they have both, and of God's own making, and if they be Christians, they be co-proprietors with God. The taste must be morbid indeed which can prefer the less to the greater, the mean to the magnificent, and, at best, the imperfect and miniature copy to the great and glorious original.

It is to be regretted that so little is done to form the taste we speak of, and that cases of *sincere* and devout attachment to the beauties and wonders of the external world are so rarely to be met with, not only among the unlearned, but among the wealthier and educated classes. I do not speak of pretensions, for these are numerous; but it is easy to see that they are only pretentious, and made to serve a purpose. We know there are constitutional differences, that will produce differences here as elsewhere; but these might in general be made to be differences more of degree than of kind. The parent and teacher might do much to mend the matter if they would make it a pleasure and not a task. Let the children have opportunities of becoming acquainted with what is great and beautiful in creation, and, if possible, let their first impressions be pleasant. The associations of childhood are the strongest, and usually go with us to the grave. Hence the all-prevailing love of the place of our nativity. Perhaps few men ever had finer perceptions of what is amiable in manners and beautiful in art, than Charles Lamb; and yet, exquisite as was his sensibility here, he does not appear to have been capable of enjoying himself in the society of lakes and mountains. Byron, on the contrary, could say, and no doubt truly:

"There is a pleasure in the pathless wood,
There is a rapture on the lonely shore,
There is society where none intrudes
By the deep sea, and music in its roar."

But Byron, independently of the sterner structure of his mind, had the advantage of Lamb in his early training and habits. He had conversed with Nature in her moments of repose, his fancy had mingled in the ennobling stir of the elements; had drank deep from the fountains of the hills and imbibed the spirt of the solitary glens; had put a tongue into the mysterious winds as they passed, and had gathered the leaves of the fôrest, as the leaves of the great sybil of Nature. He retained this love of Nature to the last, and it seems to have been his only solace and enjoyment. The Christianity of Newton was not hurt, but heightened, by his frequent and earnest reading of the wonders of the visible universe. Its effects are not only mental, but moral, also. Other things being equal, the person who loves the works of God is more likely to think of and love God himself, than the person to whom these works are a matter of indifference.

The love of flowers, to those who truly love them, is an old melody, which, first attuned in earliest time, in the golden age of legendary lore, has come down to us, growing more mellow and sweeter as it chimes through the centuries, and now and then echoes with a music akin to that of heaven, in the human heart. And this floral music has not been without its deep and lasting influence. Little may we know of the sad lives which it has made brighter—the drooping heart made to bear up and on, until they ended 'neath a grassy, flower-strewn grave. It is one of the links binding the present to the past, joining us in sympathy with those who lived long ago; and while we gather the sweet floral tribute, we but renew a pledge with the olden time, and our hearts beat in sympathy with the universal heart-beat of the human race for centuries.

There is an influence arising from these bright gems of nature which imperceptibly makes one holier and purer. It has been said that "no botanist was ever an infidel." May we not also say that no *true* lover of flowers can be a bad person? Then let us cultivate the love of flowers. Develop it in the minds of the children. Let them grow up surrounded by flowers, and be assured that in the garden of the heart they will unfold, and golden fruit ripen in after-years. Autumn returns and restores; the gay and invalid return to the city, the birds to the south, the seed is restored to the granary, the leaves to the earth, and the heart that has been out-of-doors all summer comes home from its wanderings by field and stream, and the question naturally comes as we turn indoors, what can we gather up from her rays of sunshine and brightness and take in with us to shed brightness through the long winter? 'Tis true, our summer friends are flown. Nothing to the casual observer relieves the dullness; but the evergreens, which were almost lost among the deciduous foliage, now look out green and unchanged from the naked branches of the grove, with neither reproach for our neglect nor boast over the departed. They are like friends, who, in thinking of our need, forget all that they have laid up against us; and between them and the lofty spirit of mankind there is another point of resemblance. Hew down those gay trees, whose leaves scatter at the first breath of winter, and they sprout from the root more vigorously than before. The evergreen, once struck to the heart, dies.

But to the true lover of nature there are more green spots than the evergreen trees. As we were going to church one Sabbath morning in winter, and everyone seemed to be impressed by the general soberness of the scene, Grandma was gathering strength from the bright-green tufts of moss which were now and then to be seen, and which none of the rest of us would have noticed but for her calling attention to them. "See those bright-green spots—how beautiful! They seem to say, 'Brighter days are coming; we have done our part, and God has helped us.'" Why, we all felt better for that look and those cheering words. Oh, what a true type this was of her life! In the winter of old age she was truly a "green spot" in all the lives which came in association with her. How many of the dear old faces have I seen who have loved flowers all their lives. As they near the celestial portals, they cling closer to and love more devotedly those gems of brightness with which the Giver of all good has strewn our pathway. Hume, when dying in Paris, asked the physician if his last moments had not come. The physician was silent, but the dying man read the sentence in his face. The doctor asked him if there was anything he wished. "Yes," said he, "my wife sleeps; do not disturb her, but bring me those flowers there which she brought me this morning." The flowers were brought; he clasped them to his heart, and as he closed his eyes in death, whispered, *"Flowers, flowers—how I love them!"*

While the children are out-of-doors in summer, we do not think of something to claim their attention, which will bring both pleasure and culture with it. But when the long winter evenings come, again comes the question, What have we done towards securing entertainment that will be a joy, and will be useful also, to all of us? I do not propose giving any list of plants—you can get them from almost any florist's catalogue; but would give a few general hints, that perhaps will be of use to some.

If we would have a profusion of fine bloom during winter, we must not wait until autumn to select our plants, but commence along in May and June, take off our slips of what we wish for winter blooming as soon as they are rooted, which should be done in small pots. Set these pots out in the ground, up to the rim, in some shaded place like the orchard, under the trees. They will require but little care. Just see that they do not get too dry, but if rains come seasonable, with most plants it is sufficient. When the autumn comes, take up these plants, re-pot them into larger pots, and place in the house, and you will have something of beauty and a joy all winter. One of our sweetest little winter plants, and which requires as little trouble as any, is the lily of the valley. Get the little "pips" from the florist. It will not hurt them if they freeze. Plant three or a half-dozen in a pot, and you will be rewarded in a few weeks by a profusion of delicate little flowers. Their faces seem almost human, with an expression of admiration mingled with humility, and carry our thoughts away back to the good old grandmothers, who spent their days and weeks in making linen for their households.

Here we have a delicate flower some friend has told us was "perfectly splendid." We pay a high price to some florist for a plant, and, knowing nothing of its requirements, soon nurse it to death. Some will send up a sickly stock, but soon fall away out of sight. We have all seen their human compeers. We find them just emerging from colleges, and entering almost all professions; they spring up in the social hot-beds of caste and distinction. I suppose it is some of these delicate, white-handed flowers the young ladies think of when they declare they won't marry a farmer.

Here we have the gorgeous geraniums, flaunting their scarlet colors as if to challenge admiration; but how many different faces do we see in looking over our collection of plants! Here is Miss McBride, with nothing to wear, all doubled up in silk and feathers. Then there are steady-going business men—sober matrons, with a gleam of reproof or indignation in their eyes, some looking pityingly at you, almost making you weep. Others have expressionless eyes, as if dimmed by great mental cobwebs that gather dust and hang in festoons in the poorly-furnished attic. Yes, and here is one that reminds you of your genial, good-natured aunt, sitting in the kitchen door shelling peas for dinner. Then here is the constant, green, never-changing ivy, the true friend who sees all your faults yet loves you still; and the bosom friend, the old "*Begonia Rex,*" as well as the *Oxalis florabunda,* which, like a little tired child, goes to sleep at night. And we might go through a long list, comparing them to the human family, for so clear is the analogy.

Oh! study the flowers, their habits and structure. Give some to the children; they will gladly enter into the study with you, and while they are learning of nature, there is going on, in the moulding of the character of that child, an influence which will stamp its signet there, never to be effaced. So, make the house bright and cheery with flowers in winter. For whoso careth for the flowers, will much more care for Him who bestoweth them all.

HOME.

BY GEO. Y. JOHNSON, LAWRENCE.

I speak, not expecting to very greatly enlighten by anything that I may say, but that I may draw a word-picture before your mind's eye, and lay upon the canvas of your perceptions a few thoughts as to the difference between a true and false home, and their influences upon those who stay therein, and the tendency to good or evil of things constantly before the eyes, and therefore unavoidably in the thoughts of beholders, as they go in and out, day by day. From lack of time, I can only hope to bring to your notice a few things, "stirring up your pure minds by way of remembrance," and set you to considering and thinking of these things for yourselves; and if I succeed in doing this much, shall be well repaid, and feel that the time is not illy spent. We all well know that *thinking* leads a man to knowledge. He may see and hear, read and learn whatever he pleases, and as much as he pleases, yet he will never *know* anything of it except that which he has *thought* over—that which by thinking he has made the property of his own mind. Take away thought, and a man becomes no better than a dumb animal. It is only by thought that man becomes truly a man. One of the Apostles says, "Ponder these things in your hearts;" and God himself says to his people, "Come let us reason together"—both being only different forms of saying, Think! Think! Do your own thinking. So I come to you only making suggestions to set you to *thinking*.

In the mountains of Tyrol, hundreds of women and children come out at bed-time and sing their national songs until they hear their husbands, and fathers, and brothers answer them from the hills, on their return home. Ah! sweet word and fond welcome to all they hold most dear. It is said, that upon the shores of the Adriatic the wives of the fishermen come down by the shore at sunset and sing their melodies. They sing one verse, and then listen for some time; then they sing the second, and so on, until they hear the answer from the fishermen, who are thus guided to their homes. And many of us, on our return from a hard day's work, have been cheered, and our hearts caused to beat quick and joyfully, in memory's glad review, at sight of the light in the window, placed there by willing hands, prompted by loving hearts. The Scotchman, plodding o'er the moor, is cheered by the glow of his "wee bit ingle, blinking bonnily." So, in these words, I hope to awaken glad thoughts, and in future years, as passing over this State, to *see* the answers in better-arranged home-surroundings.

There be places where people stay and eat and sleep, that are no more worthy to be called *homes* than a swill-barrel is suitable for a butter-chest. Shall I tell you the truth and awaken you to better thoughts, or shall I soothe your minds to rest by finely-rounded sentences, and leave you no food for thought? I have sometimes almost feared to tell the truth, for the hearing of it is and always has been unpalatable to those who are determined not to relinquish error. Yet truth cannot give offense to the honest and well-meaning, and fully believing my audience to be of the latter class, I go forward and assure you that the manner in which I speak is as the plain dealings of a friend, and differs as widely from the rancorous vehemence of an enemy, as does the friendly probe of a surgeon from the dagger of an assassin.

All allowance must be made for the hurried condition of our Western men, who have pushed out this far towards the setting sun, endeavoring to establish themselves upon their own land. Yet in the eager race for wealth all sight must not be lost of other important matters, besides getting possession of a quantity of real estate. It has been said that a man who plants a tree enters into moral bonds to till and care for it; so I would say that the man who buys a tract of land enters into moral bonds to improve it, and render it delightful to the eye—pleasing and soothing to the mind. All of us have seen, as we have passed over these broad prairies, places where people stay; houses, with no surroundings to make them inviting, not even a solitary tree or bush in the door-yard to relieve the terribly woe-begone, God-forsaken appearance.

I remember once showing some friends about over Kansas, and, hearing of a farm for sale, they asked me to take them to it. Passing up through the field, we found each side of the drive thickly skirted with cockle-burs, the tops as even as if they had been sheared, and so dense that had I thrown my coat on top of them it would have remained. My thoughts went back to what a wise man said of a *sluggard*, and, noticing some corn tassels above the burs, asked the man living on the farm why he let his corn-field get so foul. "Oh," says he, with the greatest nonchalance, "that corn was not *planted:* it just *volunteered.*" Glancing along I noticed it was in *rows*, and it greatly surprised me, and my surprise was increased when I noticed these rows were about four feet apart. But great was my amazement when, turning an angle and glancing down the other way, I found the corn was in rows the other way, too. What a wonderful discovery this man had made! How to make corn "volunteer" in check-rows, four feet apart each way, without even plowing the land—for such was his story. Ah! here was genius—a final triumph of brain over muscle; a genius hiding his light under a bur-field. Oh, Kansas! how blessed to be the mother of such a giant intellect. The curse foiled, and no more sweat to be given in exchange for bread. On the eve of clasping his hand and proclaiming a public benefactor, and thanking God he was a Kansas man, my ardor was suddenly checked by his coolly remarking, "Humph! that's nothin'. It always does that way where I came from, *down in Missouri.*" Passing on to the house, we found the door-yard fence gone to wreck; the gate held askew with a solitary hinge; hogs wallowing in a mud-hole at the kitchen well, and grunting in supreme porcine satisfaction; some of the boards rotted out of the porch floor; setting hens snugly ensconced in the corners of the porch; the steps rotted away from before the door-way; no trees in the yard, no flowering shrubs or flower-beds—not even a bush, except a solitary wild gooseberry in the corner; and the house, although it cost thousands of dollars, looked, in shape, like a ten-bushel dry goods box, with two slanting boards for the roof, and holes sawed out vertically for doors and windows, with a horizontal gash cut above the largest for transoms, and several large rotten potatoes set here and there on top for chimneys. But the outside was regal splendor, compared with the smoke and grease-begrimed inside, too smoky for owls and bats, and too greasy for bed-bugs, 'twas only fit for the genus *homo.* When you walked over the floor the echo was as doleful as the dull thud of the first clods upon the coffin lid above the loved departed—its first welcome to the grave; and why should it not, for here was a monument cursed to the memory of *a home*. Talk about rearing children to love their country, revere their parents, respect their homes and adore their God, in such a pile of rubbish as that! It was in just such a place as this that an eight-year-old boy, when his father sat at table, walked up behind him, catching his collar-band, pulled his shirt back from his neck and spat down his back, coolly remarking, "Take that, Josiah Nickols!"

I left this house ill at ease in my mind and worse at my stomach, wondering where the remainder of the family were, and if they had really left him alone in his filthiness, when, passing around the house to the side opposite the sun, I encountered his five dogs lazily snapping at flies, and there upon the bare ground lay his wife and three children, with unkempt hair and unwashed faces, singing—

"We would not live always,
We came not here to stay;"

And I mentally ejaculated, "Even so; move quickly!" My friends did not invest, but held their noses and passed outside; and being younger then than now, I said, "Let Ephraim alone—he is joined to his idols."

What is it that gives man a desire for noble deeds and generous actions? Is it living like hogs, or roosting like fowls? No, thrice no! It is the gentle influence of winds, rich laden with perfumes, from far different surroundings.

In my wanderings through Kansas, I once happened upon another scene. Passing along a winding road, under the shadow of a large mound, I came to a drive, edged with two neat stone walls, over which, here and there, strayed a wild vine; turning into this drive, at the further end was to be seen a clump of cedars. Over a rustic gateway climbed the wild ivy, along the walks grew beautiful flowers. About the yard, here and there, stood rustic flower-stands, made of old stumps and tree-forks. Over the door twined the honey-suckle, about the windows grew Chinese wistaria, while up the sides and corners of the house, and along the eaves, clung and hung, in beautiful festoons, that queen of beauties, the *five-leaved ivy*. In the rear of the house murmured a brook, as the waters rushed over a little obstruction made by throwing in a few loads of stone. Inside of this house was found the planning and presiding genius, a plain farmer's wife. And yet this was a small hewed-log house, with a small frame addition, the whole thing not worth, or costing, to exceed $200. Yet in and about this home pervaded that which money may augment but never can buy—the air of contentment and harmony—a blessed *home* where the tired wanderer could find a welcome and a rest.

Oh, blessed contentment!—the mental philosopher's stone, which, if it cannot remove the disquietudes arising from a man's mind, body or fortune, makes him easy under them. It has indeed a kindly influence on the soul of man, in respect to every being to whom he stands related. It extinguishes all murmuring, repining and ingratitude towards the Being who has allotted him his part to act. It destroys every tendency to corruption, and gives sweetness to his conversation, and a perpetual serenity to his thoughts. Contentment can only be obtained by those who have about them the influences of a sweet home, and are fully gathered into and under its benign influences. It then begets gentleness in the heart; and gentleness is the great avenue to social enjoyment. Amidst the strife of conflicting interests, it tempers the violence of contention, and keeps alive the seeds of harmony; it softens animosities, renews endearments, and renders a man's countenance a refreshment to his fellow-man; for, "as iron sharpeneth iron, so does the countenance of a man that of his friend." Banish from the earth the gentleness engendered by sweet homes, suppose the world to be filled with none but "staying-places," and the harsh and contentious spirits naturally reared in such places, and what kind of society remains? The wildest solitude of the desert were preferable. The conflict of contending elements, a den where serpents hiss, or beasts of the forest howl, would be the only proper representation.

Nature has already provided a sufficient quantity of evils for man; let him make the best of life that he can. We suffer from the storms, the jealousies and bickerings that come from without, without conspiring with sloth, negligence, or criminal thoughtlessness, to render our *homes* unpleasant, our families unhappy, and ourselves miserable. Reverses will come; we cannot always stay their fierce onslaughts, but we can break their force if we can fortify ourselves with a pleasant *home*, to which all members of the family gladly gather, to shield us from the storm, or make the trial easier and rob it of its sting by sharing it.

It is a wise provision that we have sorrows as well as joys. If we were always prosperous, we would be giddy and insolent. If we were always afflicted, we would be sullen and despondent. Hopes and fears, joys and sorrows, are one given, the other permitted, and happy is that man who so surrounds himself by home endearments as to augment the one and find consolation through the other.

I have given you herein two different types of places called home—one expensive, yet abominable and debasing; the other cheap, yet harmonious, pleasant, and elevating. You have seen those who live in nice houses, with pleasant, swarded yards, so extremely utilitarian as to forbid the *foolishness* of having any ornamentals, and would have no trees or plants in their door-yards except those that would bear fruit. I have an instance now in my mind. A man begged his wife to let him buy and plant evergreens and other ornamentals, to add homelikeness to their otherwise well-situated place, but she put her foot down firmly upon all such foolishness, and the poor man went sorrowing that he could not be allowed—shame to his wife!—to arrange his place into a pleasing and attractive home. Thus it went on for years. The woman sickened and died, and to-day lies in an unhonored and unloved grave. He buried her, and groaned outwardly, but I have no doubt inwardly thanked God that he was free; and then he, who in her lifetime could do nothing in peace unless it promised a money reward, put in a large bay-window, and filled it with choice plants, planted his door-yard with ornamentals, trained climbing roses over his windows, and took comfort in his solitude—*glad that she was dead!*

Ladies, how many of you would like to close your eyes for that last, long sleep, and have for your last thought the assurance that your death is a joy, because you have never made home pleasant?

Let us be neither too negligent nor too grasping, to surround ourselves with pleasing objects, and thus increase the strength of home influences. What kind of a garden do you suppose was the one planted eastward in Eden? Did it ever strike your fancy that it was filled with nothing but fruit trees, and potatoes and turnips and cabbages—in short, all those things to satisfy the stomach, and nothing to rest and charm the nobler part of man? How charming to think that in the cool of the day, God aired himself in a pumpkin patch, or perambulated through an onion bed! No; we are expressly told that "out of the ground caused He to grow every manner of tree that was pleasant to the sight, and those that were good for food." Mark the arrangement: *first* ministering to man's nobler nature, and then, as a secondary though needful part, caring for his temporal appetite. With so illustrious an example, let us not reverse the order, and by looking only to the satisfying of *our* appetites, or that of others for which we obtain money consideration.

Ladies, to you largely belongs the pleasure—it should never be a task—of making your abiding-place a home. We all take pleasure, and are affected with delightful sensations, when we see the inanimate parts of creation, the meadows, flowers and trees, in a flourishing state, when all nature is smiling; when the plants, cared for and watered by loving hands, are about us, and from the flowers rise their sweet incense to Heaven, bearing with them testimonies of home affection. Melancholy must be deeply rooted in the heart, if we join not in the universal chorus of joy. If you are inspired with gladness by the cheerful verdure of trees, lawns, orchards and meadows, and the ever-varying bloom of sweet flowers, that drives away sadness from your hearts, how much more happy must you be to see dull care driven away from loved ones; and the fact that you have contributed to that, is a joy unspeakable. That you have raised their hearts, drooping oft-times beneath their trials, and revived the spirits that had become as it were a barren and dry land where no water is, with the refreshing showers of your own love and kindness, manifested in the tender arrangement of pleasant surroundings, that steal away their sadness ere they are aware.

It was to such as these that a stranger found two little children paying tribute in a church-yard, by setting flowers on their graves. The stranger asked, "Whose graves are these?" "Father, Mother, and little Johnny lie here." "Why do you set these flowers here?" Their little eyes filled with tears, and, looking up into his face, they answered, "BECAUSE WE LOVED THEM SO."

Who is there, with soul so dead, but that they would rather leave this rich legacy of love behind them and gather this tribute, than to leave their millions of dollars, and with it no pleasant, loving, yearning recollections of a broken home? *Broken*, did I say? Nay, such homes are never broken, but the silken, subtle, magnetic chords are only lengthened, and bind together firmly that part of the family yet here, and the other part beyond the river, and beat in sweet harmony throughout life, and leads them into united oneness in the glorious hereafter, and keep step to the music of love throughout the endless ages of eternity. Be ye careful that your home is made pleasant, both inside the house and out, so as to hold the least member of the family, and the strongest as well in its glorious influence. "Inasmuch as ye did it to the least of one of these, ye did it unto me."

Riches may take to themselves wings and fly away, fine gold may become dim and perish with its using, "But the constancy of a true heart is never overcome," but is crowned with perennial life in that perfect home in the glorious hereafter.

VALEDICTORY.

The President closed the meeting with the following very appropriate and impressive remarks:

The lateness of the hour does not warrant protracted remarks. I can only say that, while there is a joy in simply thinking of the beautiful, that joy is far deeper when we can lead others through the same trains of thought. We delight always to look upon that which is lovely, or grand, or sublime in nature; but when we can lead our friends through shady walks and beside still waters, or into the shadows of the grand old forest, where the winds never cease to murmur, or up the steep mountain-side until the head is almost dizzy, our joys are greatly increased. Our souls are thrilled by the melody of sound, but the notes that gladden our hearts we want other ears to hear.

So in the pursuits of horticulture: our joy is largely found in the joy of others. In aiming to secure a higher and better life for ourselves, we seek a better life for our fellows. There is a joy in making beautiful homes, not for ourselves alone, but for others. We feel then that our work is not for the few, but for the many. From this social and humanitarian standpoint we view the meeting now just closing. The memory of its pleasant associations we shall carry joyfully with us into coming years. And as we review the discussions of this occasion they will recall many a pleasing feature of the few days spent in your town. One thing more is needed to do exact justice to occasions like this, (and we may look for that need to be answered soon,) so that we shall be able to carry away with us, not only the eloquent utterances of our honored friends, to be printed and read hereafter, but the very songs, with the peculiar intonations of voice, with which our whole being has been thrilled as on the present occasion, so that the voice of song will not live simply in memory, but be rising just as to-night in years to come.

I now pronounce the Thirteenth Annual Meeting of the State Horticultural Society closed.

Adjourned *sine die*.

APPENDIX.

REPORTS OF STANDING COMMITTEES, 1879.

ENTOMOLOGY.

BY G. C. BRACKETT, LAWRENCE.

[NOTE.—From the numerous requests of the readers of Vol. VIII, that the report on Entomology might be reproduced in Vol. IX, as being of great benefit to the people, and from the general interest now manifested in the subject in the State, and consequently a desire to reach all practical knowledge relating thereto, it is considered important and proper to reprint that report, with some additional notes.]

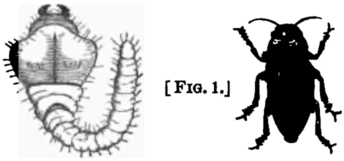
As a substitute for a report of the standing committee of this department, it is deemed advisable to introduce the following plates, with descriptions of the insects they illustrate, that many who are entirely uninformed may obtain a knowledge of some of the most common and specially noxious insects to the pursuit of horticulture, as well as others specially beneficial. The first class are subjects for destruction, while the latter should be carefully protected and their increase afforded every means of encouragement, as they assist us in the so-much-desired annihilation of the others, frequently becoming more powerful in that direction than anything within the control of man. This department is greatly indebted to Prof. C. V. Riley, late Entomologist of the Department of Agriculture at Washington, D. C., for cuts illustrating such as are here introduced; and descriptions are, by permission, taken mostly from his annual reports, made while fulfilling the duties of the office of State Entomologist of the State of Missouri.

INSECTS INJURIOUS TO THE INTERESTS OF THE HORTICULTURIST.

THE FLAT-HEADED APPLE-TREE BORER.

(*Chrysobothris femorata.*)

This borer, which is represented in larva (worm) state at Fig. 1, *a*, may at once be recognized by its anterior end being enormously enlarged and flattened. It is paler than the round-headed species, makes an entirely different burrow, never acquires more than half the size of that species, and is almost always found with its tail turned completely around toward the head. It attacks not only the apple, but the peach, pear, plum, cherry, soft maple, oak,


[FIG. 1.]

a, Worm or larva. *b*, Beetle.

mountain ash, linden, box elder, beech, (and I would add, elm and willow.—SEC'Y.)

ITS NATURAL HISTORY

Is briefly told: The beetle represented at Fig. 1, *b*, is greenish-black or bronze-colored, with metallic reflections, and the under side more coppery or brassy. The more characteristic features are two irregular, impressed, transverse marks across each wing-cover, dividing them into about three equal lengths. This beetle is diurnal in habit (that is, flies by day instead of by night), and may frequently be found basking in the sun on the trunks of those trees which it more particularly frequents. It begins to appear during the latter part of May, and is found all through the summer months. The eggs, which are pale yellow, are glued by the female by preference under the loose scales or within the cracks and crevices of the bark, several of them being not unfrequently found together; yet at times they are found laid on perfectly smooth bark, and under circumstances that would indicate that the beetle sometimes uses her jaws to puncture the tender bark so as to allow the insertion of the egg. The young larvæ hatching from them gnaw through the bark and feed upon the fiber, boring broad and flattened channels, and very soon girdling the smaller trees. When its jaws get stronger, it usually bores into the more solid wood, working for a while upward, and when about to transform it invariably cuts a passage back again to the outside, leaving but a thin covering of bark over the hole. It then retreats, and after packing the excrement around it so as to form a smooth cavity, changes to the pupa state.

The pupa, at first white, by degrees exhibits the colors of the future beetle, and in the course of about three weeks the latter (beetle) gnaws its way through the thin bark door which, as larva, it had left, closing its passageway. It is a singular instinct that teaches the larva, which has powerful jaws, to prepare for the exit of the beetle, which has much more feeble ones; and this instinct is most strikingly illustrated when the infested tree is surrounded with some covering like wire gauze, which is proof against even the jaws of the larva. In such an event, even though the wire touch not the bark, the larva will work its way through the latter and test in every conceivable way the resistance of the wire, and frequently succumbs in the effort to penetrate it.

The general impression is that this borer acquires its full development in a single year. Be this as it may, the larvæ are found of different sizes during late summer, and young ones may be noticed even in winter. In May they are mostly found full grown, or in the pupa state.

NATURAL ENEMIES.

Hidden as this borer naturally is within the retreat of its own making, it is nevertheless hunted and destroyed by woodpeckers, and is not without its insect parasites. There are several parasitic insects which prove mortal enemies of the Flat-headed Apple-tree Borer, (but which will not be treated on in this report, as I am not prepared with cuts to suitably illustrate. At this time suffice it to say, that the little ants running up and down the trees are enemies of this borer, as also of many other insects unfriendly, and should always be encouraged and protected. If the burrows of either the round or flat-headed species are opened, these little helps, the ants, will soon find the worms, destroy them, and drag them forth for food.—SEC'Y.)

REMEDIES.

In treating of the means to be employed against this Flat-headed Borer, one important fact should be borne in mind — that the natural breeding-place of this insect is undoubtedly in the old decaying oaks of our woods; in fact, it prefers partially dead or injured trees to those which are thrifty and vigorous, and partly for this reason, and partly because rough, cracked barks form a better nidus for the female to lay her eggs. The species is most abundantly found on the southwest side of young apple trees, where it is most apt to get injured by sun-scald. Sickliness in the tree, injury from the whiffletree or other cause, therefore predisposes to its attacks. It is for this reason that transplanted trees, checked as they are in their growth, usually fare badly. But there is yet one other predisposing cause, which few people suspect, and that is reckless and careless pruning, especially of the larger branches. Many a fine orchard tree and many more city shade trees receive their death-shock from the reckless sawing-off of limbs, without any effort being made to heal the wounds by a coating of grafting-wax, clay, or other protecting substance. To such wounds this borer is attracted, and plays no mean part, where had the wounded limb been properly protected, its presence would never have been known. It thus becomes of the first importance, in treating this insect, to keep the young trees vigorous and healthy, and the bark as smooth and free from injury as possible. Young trees are far more liable to be attacked than old ones, and consequently require greater care. As a preventive, nothing is better than coating the trunks and larger branches with soap, once towards the end of May, and again in July and August. Soap is not only obnoxious to the beetle, but it tends to keep the bark clean and smooth, so as to offer no attraction to the female, and is, withal, beneficial to the tree. The presence of the young borer is usually indicated by a discolored spot, a cracking of the bark, or the presence of sawdust-like excrement. But whatever preventive measures be taken, trees should be carefully examined late in the fall. It will pay to make an examination of the trees even before fall, for as early as the latter part of June, in the latitude of St. Louis, the newly-hatched worm may sometimes be found, just entering, when its presence is frequently indicated by an exuding drop of moisture on the bark, and when it may be destroyed by cleanly cutting out a small slice of bark.

[The following additional matter concerning this borer is from report of Committee on Entomology, of the Douglas County Horticultural Society, on the Flat-headed Apple-tree Borer. Reproduced by request, from p. 233, Vol. V, Kansas Horticultural Report for 1875.]

Your committee beg leave to offer the following deductions from their observations of the Flat-headed Apple-tree Borer, so destructive to orchard, shade and ornamental trees, during the years 1874 and 1875, in this State:

FLAT-HEADED BORER.

First: This very destructive insect made its first appearance in the beetle form on May 25th; were the most numerous between the middle of June and August 1st. A few were seen as late as August 26th.

Second: They commenced depositing eggs by the middle of June, which were placed under scales and in the crevices of the bark, generally upon the sides exposed to the direct rays of the sun. Wounded portions, made by bruises and trimming-off of limbs and sun-scalds, were found especially inviting to their deposits.

Third: They infest only such trees as are debilitated. Late transplanting, protracted drouths, derangements of the organisms by extremes of heat and cold, unproductive soil, neglect in care and cultivation, produce a low condition of vitality in trees, a condition sought for by the mother of this species, as most naturally adapted to a successful procreation.

Fourth: The larva, or worm, cannot survive a vigorous flow of sap, nor can it endure a continual shade. In the first condition it drowns, and in the second it weakens and dies.

Fifth: It deposits its eggs during the middle of the day, and only during warm, sunny days. In the morning and evening, on stormy days, and during the night, it retires to the small limbs, among the dense foliage, for a covert, and is very sluggish.

Sixth: It infests the apple, pear, cherry, plum, quince, soft maple, willow, ash, tulip and strawberry trees, and there is some evidence that the elm and cottonwood are being attacked by it.

In view of the foregoing facts, your committee would recommend that all such varieties of trees found liable to the attacks of this insect should be planted in the spring as early as the ground can be placed in suitable condition to receive them; and to facilitate early planting, fall plowing and preparation is advisable; that vigorous trees, carefully dug so as to preserve a large amount of the roots, be obtained in the fall, and properly trenched in upon the premises handy for planting. As soon as set, remove a large portion of the last year's growth. Mulch the ground for a space of two feet around, at least—three or four feet would be better; wrap the bodies with some cheap material, as newspapers, hay or old rags. Plant no crops among them which prevent constant and thorough cultivation of the ground, and especially leave ample room on each side of the rows for the free use of the plow without endangering the roots or chafing the bodies and limbs. This care in planting, followed with constant cultivation, will produce a strong, vigorous action, which, of itself, is the most complete safeguard against the attacks of this borer.

If, through ignorance or neglect, trees already planted became infested during the year previous, the only method of combatting it is to destroy the beetle as soon as it comes forth from its burrow. The time, as stated, of its first appearance, is the last of May, and at this time the search should begin and be kept up unceasingly and thoroughly through the season, or until the last one has been captured and destroyed. As alleged in deduction No. 5, the beetle is active only during the middle of sunny days, and in the morning and evening and during cloudy and stormy days it is sluggish. At such times it is the most easily captured. A touch even, or a jarring of the tree, will frequently cause it to drop to the ground, and, possum-like, it will appear as dead for a moment, and is easily killed. But in the middle of the day, when the sun has warmed it, it is very active and quick to run, often taking to the wing to escape at the first approach of man. However, if approached from the opposite side of the tree, a quick slap of the hand, covering it, will destroy in most attempts. Generally it will be found upon the southern side of the tree, basking in the sun's warmth, though at the approach of man it will often quickly glide to the opposide side to conceal itself from sight. All sides should be carefully looked to.

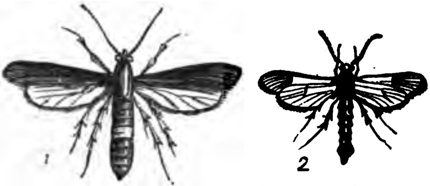
Your committee would especially call your attention to deductions Nos. 2 and 4. In No. 2 it is stated that sun-scalds are favorite spots, inviting the attack of this borer, and in No. 4, that it does not seek, nor can endure, a continual shade. These two facts furnish a strong argument in favor of low heads and a shady growth as requisite to successful orcharding in this climate, as sun-scalds seldom occur upon trees of such a form, nor will such a growth furnish congenial conditions for the existence of the progeny of the flat-heads. As it is not presumable that all the beetles will be captured, it will become necessary to examine the trees for the purpose of destroying the worms hatched from the egg which the uncaptured beetles may deposit. To detect their whereabouts is to the inexperienced quite a difficult undertaking. Until late in summer or early in autumn, no external marks indicate their presence save a small speck, or sometimes a dark line, so fine that they will not attract the attention of those not understanding the cause, as anything injurious to the tree. It will be necessary for such persons to examine into every unnatural-looking spot the eye may detect. Experience will soon remove the necessity for so close and careful examination, and enable one to detect which are the reliable markings indicating their presence. In this work a sharp knife is all that is needed, if begun in proper time, as they will be found in and just under the bark, until about September 1st, when the first ones hatched will commence to penetrate the wood. A probe made of common broom wire is all-sufficient with which to thrust them through or drag them from their holes. If, after several thrusts, a milky substance is discovered at the extremity of the probe, it is safe to conclude that a fatal stab has been given the worm, and you can pass to the next. They will be found the most numerous along the margins of wounds and new formations, healing places, where limbs have been cut off, and upon the side of limbs having an exposure to the sun. Limbs which have become bent by a heavy load of fruit are liable to their attacks upon the upper side, as the sap becomes sluggish in such places.

THE PEACH BORER.

(*Ægeria exitiosa.*)

Description by Cyrus Thomas, State Entomologist of Illinois.

In their general habits, they resemble other wood-boring insects, in that they live on the substance of the wood, but never penetrate into the heart wood. Their presence may be known by the copious mass of thick gum mixed with their detritus (wood dust), and they are more generally in that part of the tree at or just beneath the surface of the ground, though sometimes in the crotches or other parts. They are reported as being found in plum and cherry trees, as well as peach. The eggs from which these borers are hatched are deposited the latter part of summer, upon the trunk of the tree, usually near its roots. When hatched, the larva (worm) eats its way downward in the bark and sap wood of the root, where it remains till the spring of the following season, when its course is towards the surface of the ground and the outside of the tree. In June or July it prepares a place of exit, and transforms to a pupa, in a cocoon composed of its chips and castings, mingled with gum, to come out as a mother in July or August. The two sexes of the moths differ enough to be easily mistaken for different species. The male (*2*, in Fig. 2) has both wings transparent, with the fringes and a band beyond the middle of the fore wings, and the body steel blue; the edges of the shoulder tufts and two narrow bands on the abdomen, pale yellow. It expands (wings spread) about an inch. The female (*1*, in Fig. 2) expands about an inch and a half; has the fore wings, border of hind wings and body, opaque; dark steel blue throughout, except a dark-yellow band on the abdomen.



1, Female. [FIG. 2.] *2*, Male.

REMEDIES.

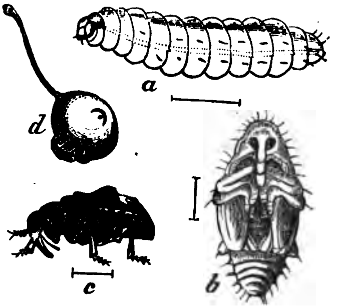
That of "mounding" is the most satisfactory, and has been practiced by some of our most successful fruit growers. To state the process briefly, in the spring, before the moths emerge (April), a bank of dirt a foot deep is thrown around the tree, and pressed firmly about the trunk. Each subsequent spring a little more earth is placed on the mound, and pressed around the trunk, as before. Some fruit growers recommend an examination of the trees each year in April and September, and with a knife destroy all borers that may be found, until the trees are four years old, and then mound thereafter. Where orchards are already suffering from them, the dirt should be removed from the roots, and a copious application of hot water, nigh unto boiling, made to the tree. This may be applied at any season, and will be effectual in killing the larva or any eggs that may be present. Hot water will not injure the tree. (An application of soap does not prevent the moth from depositing her eggs, as in the case of apple-tree borers.—*Riley.*)

THE PLUM CURCULIO.

(*Conotrachelus nenuphar.*)

Description by Cyrus Thomas, State Entomologist of Illinois.

This insect is undoubtedly one of the most destructive and difficult insects which the orchardist has to contend with. It yet remains master of the situation, although every part of its history, from the egg to the beetle, has been carefully studied, and horticulturists have tried every mode of defense and attack which ingenuity has so far been able to devise. The beetle (*c*, in Fig. 3) is of a dark-brown color, variegated with spots of white, ochre-yellow and black. The wing cases have two shining black "humps" or tubercles on them — one on each case, about the middle; behind these is a broad band of dull yellow and white. It varies in length from a little over one-eighth to one-fifth of an inch. When disturbed, it has a habit of drawing up its legs and bending its snout under its breast, when it is easily mistaken for a knot or wart on a limb, or a fragment of bark.



[Figure 3.]

In this cut, *a* represents the worm; *b*, the pupa; *c*, the perfect beetle; *d*, a plum showing the puncture made in depositing the egg, and the crescent cut. The hair-lines just below *a* and *c*, and to the left side of *b*, indicate the natural size.

The beetles usually come forth from their winter quarters in May and June. The female, when about to deposit her eggs, makes a minute cut with the jaws at the tip of her snout, and then, thrusting her snout into the cut, enlarges it sufficiently for the reception of an egg; turning around, she drops an egg into the opening, which she afterwards thrusts to the bottom of the cut with her snout. Then she cuts the crescent mark around one side of the orifice, as seen at *d* in the figure. One egg only is deposited in an opening, and is of a pearly-white color. Each female is supposed to have a stock of from fifty to one hundred eggs, and to deposit from five to ten a day. While those which appear earliest begin this work about the middle of May, it is continued by others which appear later, until the last of June or the first of July, thus extending the period of egg-depositing to about two months.

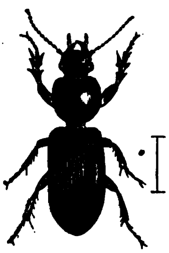
The larva (*a* in the figure) which is hatched from the egg, is a little footless worm, somewhat maggot-like, and is of a glassy, yellowish-white color, but partakes more or less of the color of the flesh of the fruit in which it resides. When full grown, it is about two-fifths of an inch long. The fruit containing this grub does not usually mature, but falls to the ground before it is fully ripe, and before the grub is quite full grown. When it has completed this stage, it leaves the fruit, now on the ground, and burrows a few inches into the earth, where it passes into the pupa state. This requires about three weeks, when it comes forth in the beetle form (*c*, in figure). As is well known, it attacks plums, nectarines, apricots, cherries, peaches, apples, pears, and quinces; but it does not so readily mature in the apple, as this fruit appears to be too juicy for it. Usually the fruit in which it resides drops to the ground before maturity, but the cherry appears to be an exception to this rule.

REMEDIES.

When alarmed, the beetle folds up its legs close to its body, bends its snout under its breast, and drops to the ground. This habit has suggested jarring the trees, and thus causing them to fall into a sheet or other contrivance for securing and destroying them, which is the most efficient remedy against them so far known. A number of orchardists, under the mistaken idea that the beetle had necessarily to climb the trees, have applied bandages as traps. (This is useless, as the beetle readily flies from tree to tree. Smudging the fruit with coal-tar smoke, to be repeated immediately after every rain, is claimed to be an effectual protection. This is easily and rapidly done. Take a pan of live coals, and put on them a quantity of coal tar. This will produce a dense smoke, which is easily scattered through the tree.—SEC'Y.)

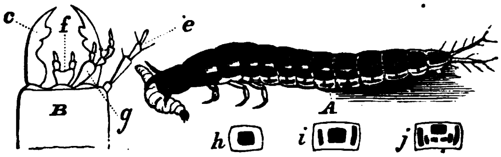
THE SUB-ANGULAR GROUND BEETLE.

(*Aspidiglossa subangulata.*)



[FIGURE 4.]

This small, polished black beetle, represented enlarged at Fig. 4, the hair-line at the right showing the natural size, in all probability serves us a good turn in helping to diminish the numbers of the curculio, for Mr. Walsh found him in a peach that had contained curculio grubs; and as the great family of beetles (*Carabus*) to which he belongs are all cannibals so far as known, and as he was therefore evidently not inside the peach for the fruit itself, he is strongly suspected of being a curculio-hunter.



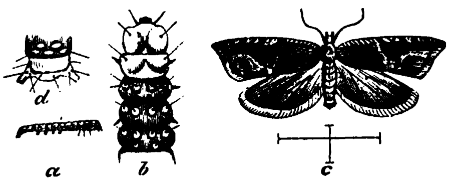
[FIGURE 5.]

Fig. 5 represents the larva of some ground beetle and cannibal. It is of a shining brown-black color above, and dull-whitish beneath. All these ground beetles are our friends, however, and should always be cherished and not crushed, as they are very apt to be from their habit of crawling and living on the ground. (The larva represented at Fig. 5 is quite common in Kansas, and is very often found devouring the white-grub larva of the common May beetle, which is so injurious to strawberry beds. I have also noticed them devouring cut-worms, which annoy our gardens.—SEC'Y.)

THE STRAWBERRY-LEAF ROLLER.

(Anchylopera fragrariæ.)

This illustration represents an insect which devours the leaves of our strawberries. The hair-lines just beneath the winged form, *c*, indicate the natural size. The larva (*a*, in figure above) is a very narrow, slender, light-greenish worm, or rather a pale, dull, olive color, from one-third to nearly one-half of an inch in length, the head reddish-brown. It crumples and folds the leaves, feeding on their pulpy substance, and causes them to appear dry and seared, and most usually lines the inside of the fold with silk. There are two broods of this leaf roller during the year, and the worms of the first brood, which appear during the month of June, change to the pupa state within the rolled-up leaf, and become minute reddish-brown moths during the fore part of July. After pairing, the females deposit their eggs on the plants, from which eggs, in due time, hatch a second brood of worms. These last come to their maturity toward the end of September, and, changing to pupæ, pass the winter in that state. (This insect is not confined to the strawberry, as one might conclude from its name. I have found it feeding upon the leaves of the black and red raspberries, though not so numerous as on the strawberry, but it seemed as much at home.—SEC'Y.)



[FIGURE 6.]

In this cut, *a* represents the worm; *b*, its head and first segments magnified; *c*, the moth.

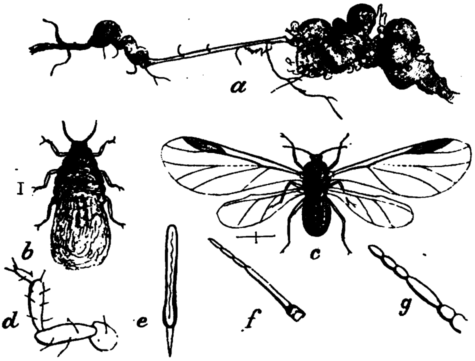
REMEDIES.

The only modes of fighting this destructive foe of the strawberry are, first to plow up, either in the spring or in the fall, such patches as are badly infested by it, by which means the pupæ will probably be buried and destroyed; and second, not to procure plants from an infested region, so as to run the risk of introducing the plague upon your farm; (third, hand-picking, or rather hand-killing, can be made effectual if persevered in and carefully done. This method requires some little experience, as the worm is very quick-motioned, and will slide out of the folded leaf which it inhabits at the first disturbance, and will generally escape at the base end of the leaf to the ground, and secrete itself among the mulching or in the litter of decayed leaves. If the whole leaf is quickly grasped by the hand, the worm is easily crushed. All such leaves should be removed from the plant, and burned; for while the worm can be thus killed, there may remain a chrysalis, which may escape the pressure. It is useless to attempt to unfold the leaf for the purpose of killing the worm.—SEC'Y.)

THE APPLE-ROOT PLANT LOUSE.

(Eriosoma pyri.)

Fig. 7, accompanying this article, fully illustrates the Apple-root Plant Louse, highly magnified; *a* is a portion of a root as it appears after being attacked by this louse — the knotty or warty excrescences being caused by the punctures of the insect in search of the plant juices for food; *b* illustrates the larva, and *c* the winged state; while *d* represents the leg, *e* the beak or proboscis, *f* an antenna of the winged individual, and *g* that of the larva — all highly magnified. The hair-lines just below the left wing of the perfect insect (*c*), indicate the natural size of the perfect insect, with expanded wings. The young louse is of a deep flesh or pink color, and the proboscis extends the whole length of the body, while the older specimens have a deeper purplish hue. Many confound this insect with the Woolly Aphis, or louse found upon the under side of limbs on the tree. This one confines itself to the roots, with rarely an exceptional case, while the woolly louse equally adheres to the portions of the tree above ground. A few of the root species may occasionally be found on the suckers that spring up around the butt of the trunk, and even on the trunk and limbs, especially in places where a branch has been formerly amputated, and nature is closing up the old wound by a circle of new bark; but such cases are rare. Wherever this insect works, small as it is, it may be easily recognized by the peculiar bluish-white cottony matter which it secretes from its body.



[FIGURE 7.]

NATURAL REMEDIES.

From the enormous rate at which all plant-lice multiply, it is plain that, if there were no checks upon the increase of the Apple-root Plant Louse, it would, in a few years, sweep away whole orchards, especially in southern latitudes. Luckily for the fruit growers and the fruit lovers, there exist two, at all events, and probably three such checks. The first is a very minute parasite fly, which infests the larva state of the insect. The second, the Root-Louse Syrphus Fly (fully illustrated on following page, at Fig. 8), is one of our most valuable aids in the reduction of this troublesome enemy. Like the larvæ of many other parasites, it is voracious in appetite, and makes rapid work in devouring the minute root lice. The appearance of this, as well as of all other parasites, should be thoroughly studied, that a ready discrimination can be made between friend and foe. The third insect which preys upon these root plant lice, at least in Missouri, is a small species of Ladybird.

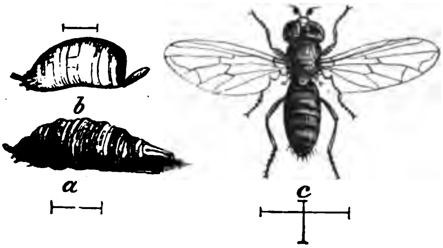
ARTIFICIAL REMEDIES.

Mulching placed around trees infested with this root-louse is found to have the effect of bringing the lice to the surface of the ground, where they can be easily reached and destroyed by abundantly drenching the ground with hot water. (Another means used, is dressing the ground around such infested trees with wood ashes, which leach with the rains, saturate to quite a depth, and prove fatal to all the lice they reach. Young trees obtained from nurseries sometimes contain these lice upon their roots (resembling white mould), and can be cleaned of them by dipping the roots in a weak lye; they will then be safe for planting, and will generally produce as vigorous, healthy trees as others.——To nurserymen let the injunction be given, and doubly emphasized, that, for their own reputations' sake as honorable, intelligent and "square" men, having the highest regard for the horticultural interest of our State and an honest desire for the success of those engaged in rearing orchards, they should never allow trees infested with this louse to go from their grounds — not even for thrice the price of clean trees — thereby scattering the seed that shall cause an incalculable injury and losses of the most serious character; and the nurseryman who is not well informed with reference to the insects and their habits, which infest the trees and plants which he propagates and offers for sale in the market, is disqualified for the pursuit, has mistaken his calling, and there exists no apology for him.—Sec'y.)

ROOT-LOUSE SYRPHUS FLY.

(*Pipiza radicum.*)

This friendly insect, which preys upon the Apple-root Plant Louse, represented at Fig. 7 of this report, is seen in the larva or worm form at *a*, Fig. 8 — a footless maggot about half an inch long, and of a dirty-yellow color. It is generally found more or less covered with mud, and with the woolly matter secreted by the lice, and is not by any means easily discerned. It changes in the fall to the pupa state (*b*, Fig. 8), from which, in the following spring, there emerges the perfect fly, as shown at *c*, Fig. 8, in enlarged form, the lines underneath indicating the natural size.



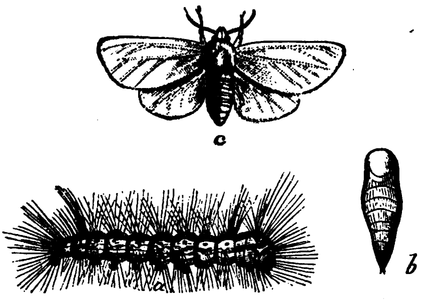
[Figure 8.]

In this cut, *a* represents the larva; *b*, the pupa; *c*, the perfect fly.

FALL WEB WORM.

(*Hyphantria textor.*)

This insect is represented at Fig. 9: *a*, the full-grown worm; *b*, the chrysalis form; *c*, the moth. This insect has been taken for the *Tent Cater-*



[Figure 9.]

pillar; but as it works in the latter part of the summer and during the fall, and the Tent Caterpillar works in spring and never in the autumn, it cannot be the same. The descriptions are materially different. The female deposits her eggs in a cluster on a leaf, generally near the end of a branch, which hatch during the months of June, July and August. Each worm begins spinning the moment it is born, and by their united efforts they soon cover the leaf with a web, under which they feed in company, devouring only the pulpy portions of the leaf. As they increase in size they extend their web, but always remain and feed under it. When young the worms are a pale yellow, with the hairs quite sparse, and with two rows of black marks along the body, and a black head. When full grown, they generally appear pale-yellowish or greenish, with a broad, dusky stripe along the back, and a yellowish stripe along the sides, and they are covered with whitish hairs, which spring from black and orange-yellow warts. The chrysalis (Fig. 9, *b*) is of a very dark brown color, glabrous and polished, and faintly punctured, and is characterized by swelling or bulging about the middle.

The moth (Fig. 9, *c*) is white, with a very slight fulvous (dull yellow, with a mixture of gray and brown) shade; it has immaculate wings, but the front thighs are tawny yellow and the feet blackish: in some the tawny thighs have a large black spot, while the shanks on the upper surface are rufous (brownish red). In many all the thighs are tawny yellow, while in others they have scarcely any color. This insect passes the winter in the pupa state, under the ground, and the moth emerges during the month of May, or fore part of June. The worm is found on a great many kinds of trees, though on some more abundantly than others, but with the exception of the different grape-vines, the evergreens, the sumachs and the ailanthus, scarcely any tree or shrub seems to come amiss to its voracious appetite.

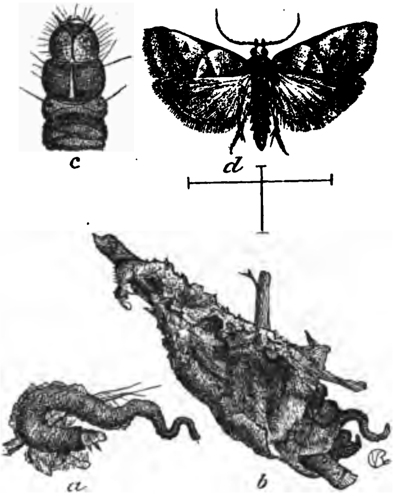
REMEDIES.

As, therefore, nothing can be done to materially affect this insect during the winter, we must do all the fighting when the worms first hatch. Their web soon betrays them, and the twigs or branches containing them can be taken off, and the worms crushed by the foot; (or, if taking off the limb is objectionable, they are easily mashed with a gloved or otherwise-protected hand.—Sec'y.)

THE RASCAL LEAF CRUMPLER.

(Phycita nebulo.)

This insect is represented, considerably magnified, in Fig. 10. (It is what is commonly known as the Leaf Roller; found very numerous in the orchards of central and southern Kansas.—Sec'y.) It is one of those insects which is hardly noticed while carrying on its most destructive work; for it is most voracious during the leafy months of May and June, and is then more or less hidden by the foliage of the tree which it so effectually helps to denude. But the nakedness of winter, though it does not reveal the surreptitious worm, lays bare and renders conspicuous its little house; and those houses, (larval cases,) whether closely attached in clusters to the twigs, as at *b* in the figure, or hidden in a few seared and silk-sewed leaves, are unerring tokens of past injury to the trees, and symbols of increased injury in the future, unless removed. The bunches of leaves anchored to the tree by strong silken cables, and breasting defiantly every winter's wind, are, indeed, *significant insignia*, upon which is written in characters, if not in words, "Result of careless culture and unpardonable neglect."



[Figure 10.]

Here, *a* represents worm case; *b*, case attached to a limb; *c*, head and first segments; *d*, perfect moth. All are magnified; the hair-lines just under the moth, *d*, represent the natural size.

This insect sometimes becomes so prodigiously multiplied in young orchards or in the nursery, as to seriously affect the health of the trees; for it does not confine itself to the leaves, but often in early spring commences on the swelling buds, attacks the young fruit, or gnaws the tender bark. There is but one brood a year, and the larva, about one-third grown, invariably passes the winter protected in its case. At this season of the year it is always of a deep reddish brown. As the leaves expand in spring, it rouses from its winter lethargy, and after "heaving anchor"—to use a nautical expression—by severing the silken connections of its case, travels in search of food, and having found it, secures its case again, and breaks its long fast. Toward the end of May it acquires its growth, when the earlier brown color frequently takes on a more or less decided deep hue. It is a smooth worm. The case at this time usually presents the appearance at *a*, Fig. 10, being crooked and twisted like a little horn, gradually enlarging, cornucopia-fashion, from tip to mouth. It is formed of the worm's excrement and other debris, interwoven with silk, and is completely lined on the inside with a silken carpet. The worm leaves it for feeding purposes mostly during the night. The chrysalis is formed inside this case, and the moths commence to make their appearance during the fore part of June, and later as we go further north.

The moth *d*, in the figure, has front wings of a pale ash-gray color, variegated with cinnamon brown and dark brown, while the hind wings are of a uniform dusky gray. The male is distinguished from the female by a little horn-like tuft on the basal joint of the antennæ, which is a characteristic of the genus. The worms hatching from the eggs deposited by these moths are about one-third grown when winter sets in, and they pass this season as already described, and thus the insect continues from year to year the cycle of its life.

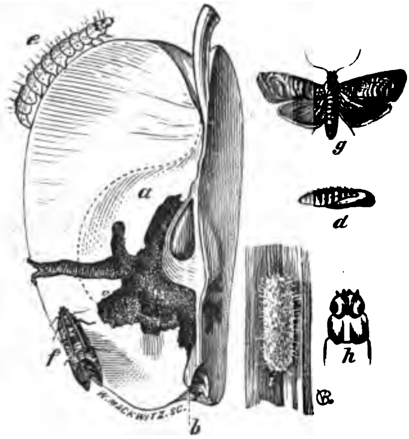
REMEDIES.

The Rascal Leaf Crumpler is one of those insects which from their peculiar habits are easily subdued. The orchardist has but to bear in mind that it is single-brooded, and that it passes the winter in its case, and he will understand that by collecting and destroying these cases in the dead of the year when the tree is bare, he effectually puts a stop to its increase. If this fact was more generally recognized, we should see fewer of these in our orchards and nurseries. Whether collected in the winter or pulled off the trees in spring and summer, these cases should always be thrown into some small vessel, and deposited in the center of a meadow, away from any fruit trees. Here the worms will wander about for a few yards, and soon die from exhaustion and want of food, while any parasites with which they be infested will mature and fly off. In this manner, as did Spartacus of old, we swell the ranks of our friends while defeating our foes. When so simple a remedy is at hand, it is hardly necessary to seek for others. All the cases should be removed, as even empty ones afford a snug retreat for some other insects. The female Canker Worm particularly is fond of depositing her eggs within such cases, as I have frequently found them crowded with such eggs.

THE CODLING MOTH, OR APPLE WORM.

(*Carpocapsa pomenella.*)

Fig. 11 represents it in all its states, and gives at a glance its natural history: *a* represents a section of an apple which has been attacked by this worm, showing the burrowings, and channel of exit to the left; *b*, the point at which the egg was laid, and at which the young worm entered; *e*, the full-grown worm; *h*, its head, and first segment magnified; *i*, the cocoon which it spins; *d*, the chrysalis to which it changes; *f*, the moth which escapes from the chrysalis, as it appears when at rest; *g*, the moth with wings expanded. (The moth appears in Kansas generally during the month of April.—Sec'y.) The first worms begin to leave the apple from the 5th to the 10th of June, and become moths again by the fore part of July. While some of the first worms are



[Figure 11.]

leaving the apples, others are but just hatched from later deposited eggs, and thus the two broods run into each other; but the second brood of worms (the progeny of the moths which hatch out after the first of July) invariably passes the winter in the worm or larva state, either within the apple after it is plucked, or within the cocoon. I have had them spin up as early as the latter part of August, and at different dates subsequently till the middle of November, and in every instance, whether they spun up early or late in the year, they remained in the larva state till the middle of April, when they all changed to chrysalids within a few days of each other. Though the codling moth prefers the apple to the pear, it nevertheless breeds freely in the pear. It also inhabits the fruit of the crab apple and quince, and has been reported as breeding in the sweetish pulp of a species of screw bean which grows in pods; also in plums and peaches. As a general rule, there is but a single worm in each apple, but two are sometimes found in one and the same fruit. The eggs require from four to ten days to hatch. The worm exists in larval state twenty-five to thirty days, and in the pupa state twelve to eighteen days.

REMEDIES.

Though with some varieties of the apple the fruit remains on the tree till after the worm has left it, yet by far the greater portion of the infested fruit falls prematurely with the worm to the ground; hence much can be done toward diminishing the numbers of this little pest, by picking up and destroying the fallen fruit as soon as it touches the ground. For this purpose hogs will be found quite valuable, when circumstances allow of their being turned into the orchard.

There is another remedy, which is always practicable, and more infallible than the use of hogs. It is that of entrapping the worms, which may be done by either of the following modes:

1. *Paper bandages.*—Common straw wrapping paper, 18x30, can be bought for sixty cents per bundle. Each bundle contains 240 sheets, and each sheet folded lengthwise thrice upon itself will give us eight layers between two and three inches wide, and of sufficient length to encircle most ordinary trees. It is easily drawn around the tree and fastened with a tack, and so cheap, that when the time comes to destroy the worms (every ten and not longer than fourteen days), the bandages containing them may be detached, piled in a heap and burned, and new ones attached in their places. If eight bandages are used to each tree during the season, the cost will be just two cents per tree; and the owner could well afford to treble this number of sheets, and keep them on each tree, either together or in different places.

2. *Rags.*—These placed as recommended for paper, or hung in the forks of the tree, have very much the same effect, but are more costly and difficult to get of requisite length. Where they can be had cheaply, they may be detached from the tree and scalded with their contents, and then replaced.

3. *Hay bands.*—These, on account of their greater inconvenience, I place last.

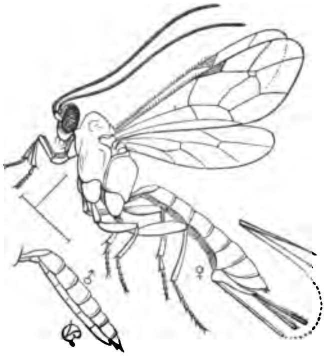
All these methods are good, and the orchardist will be guided in his choice by individual circumstances. The philosophy of the band method is simply that the worms in quitting the fruit, whether it is on the tree or on the ground, in their search for a cosy nook in which to spin up, find the shelter afforded by the bands just the thing, and in ninety-nine cases in a hundred they will accept the lure, if no more enticing one be in their way.

To make this system perfectly effectual, I lay down the following as rules: 1st, The band should be placed around the tree by the first of June; 2d, It should be examined every week, or at the very latest, every two weeks, and the worms killed; 3d, The trunk of the tree should be kept free from old, rough bark, so as to give the worms no other place of shelter; 4th, The ground itself should be kept free from weeds and rubbish.

But many of the worms of the second brood yet remain in the apples, even after they are gathered for the market, and these wormy apples are barreled or put in bins with the sound ones, and stored. From them the worms will continue to issue, and they generally find plenty of convenient corners about the barrels, and particularly the hoops, in which to form their cocoons. Hundreds of these cocoons may sometimes be found around a single barrel, and these would be sufficient to abundantly continue the species for another year; and when we consider that every female moth which escapes in the spring lays from two to three hundred eggs, and thus spoils as many apples, the practical importance of thoroughly examining, in early spring, all barrels or vessels in which apples have been stored, becomes at once apparent. It should therefore be made a rule to destroy all cocoons found on such barrels or vessels, either by burning them up or by immersing them in scalding-hot water.

THE RING-LEGGED PIMPLA—APPLE-WORM PARASITE.

(*Pimpla annulipes.*)



[FIGURE 12.]

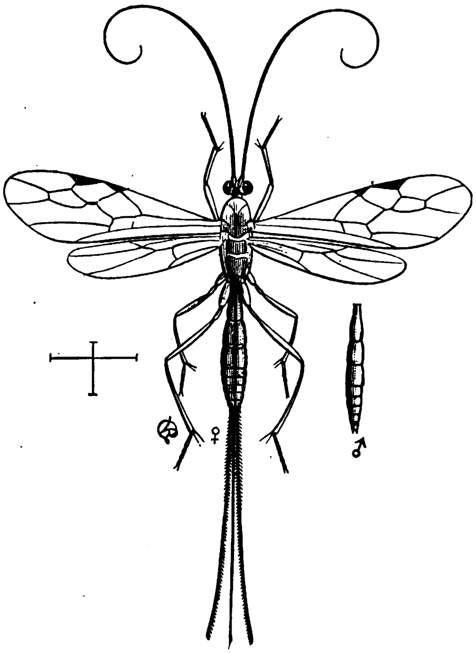
This insect (enemy of the Codling Moth, or Apple Worm) is represented in outline at Fig. 12. (The hair-lines at the left indicate the natural length, and one-half the expanded breadth.) It is a black fly, varying considerably in size—the female sometimes measuring one-quarter, the others one-half inch, exclusive of ovipositor; the male somewhat smaller. The male has a more slender abdomen, which is unarmed. This fly eats its way through the chrysalis and cocoon of the Codling Moth, without having previously made any cocoon of its own.

THE DELICATE LONG-STING.

(*Micro centrus delicatus.*)

Second parasite of the Codling Moth or Apple Worm.

This insect is represented at Fig. 13 in greatly-enlarged size—the crossed hair-lines to the left indicating natural size. It is a graceful fly, with very long antennæ and legs, and the female with a long ovipositor. The color is pale honey-yellow, inclining to brown above. The unfortunate Apple Worm is probably pierced while yet in the fruit, as it always succumbs soon after forming its cocoon and before changing to chrysalis; while in the case of the Pimpla, (the first parasite mentioned,) it is attacked either while leaving the fruit or having spun its cocoon. The larva of the Delicate Long-Sting forms, for itself, within the cocoon of its victim, a sufficiently tough, thin, oblong-oval, shiny brown cocoon, from which the perfect fly issues by cutting open a lid at one end. As both of these parasites transform within the apple-worm cocoon, it is next to impossible and quite impracticable to separate friend from foe in removing and destroying the contents of the bandages. (Recommended as remedies in treating of the Apple Worm in another part of this report.)



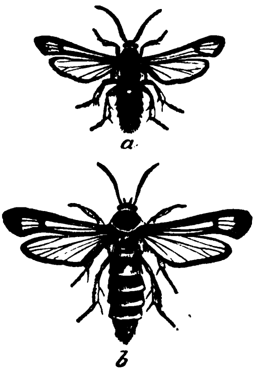
[Figure 13.]

Besides these parasites, I have found that ants, cockroaches and the larvæ of certain predaceous beetles play by no means an unimportant part in destroying the Apple Worm.

THE RASPBERRY-ROOT BORER.

(*Ægeria rubi.*)

The common borer which works in the canes of raspberries and blackberries, and is frequently mentioned in entomological works, is a footless grub,



[FIGURE 14.]

the larva of a beetle, the female of which, according to Harris, lays her eggs singly on the stem, near a leaf or small twig; but according to Mr. W. Saunders, of London, Ont., girdles the tops of young growing canes in two places, one about an inch from the other, and then between these rings thrusts a single egg into the cane through a puncture, also doubtless made by her jaw. But just as the currant, the grape, the maple and many other plants are affected with moth larvæ, as well as beetle larvæ, so the blackberry and raspberry have their lepidopterous borer, at once distinguished by its legs from the legless grub of the beetle above mentioned. Its life history is essentially the same as that of the lepidopterous (meaning soft wings, like unto moths and butterflies) root borers of the peach and grape. The worm of this insect attains an inch or more in length, is of a pale-yellow color, with dark, reddish-brown head. It dwells mostly in the root, but its burrows often extend several inches above ground. The moth (Fig. 14; *a* the male, *b* the female) has the front wings heavily bordered with rusty brown, and the body prettily marked with yellow and black, and slightly tufted.

("The colors on the abdomen form in alternate rings."—*Thomas.*) The moths issue in August and September, and probably much earlier. I know of no remedy for its injury, other than its destruction wherever found. ("The only remedy which has been suggested, and, in fact, the only one needed if attended to properly and in time, is to cut out all infested canes in spring and burn them carefully before the beetle has emerged from them. If this is done, it will prove as near a specific as any remedy which can be applied to insect pests."—*Thomas.*)

Major Muhleman thus communicates his experience with this borer:

> "It was in 1870, from July to September, that I first captured the moth, sometimes resting on the leaves, and at other times leisurely flying about the blackberry bushes. At that time, I had not noticed the effects of its work, though I had heard and read about the 'winter-killing' of Lawton blackberries. In the spring following, viz., 1871, I found my bearing canes almost all dead, and during the summer of the same year, noticed more moths. I then suspected it was that moth, or its worm, that caused the 'winter-kill.' In the spring of 1872, the last year's canes were again dead, and I determined to get at the truth of the matter, if possible. I mowed the canes all down, and then dug out the stools, cut them open lengthwise, and found the trace of the insect in every one. The result of my investigation was as follows: I found that the young worm, upon hatching, entered the growing cane at a place about four, five and six inches above the ground, and then worked downward, so that at the approach of winter it found itself in the roots, where it remained all winter; in the spring, the half-grown worm ascended through some other cane than the one in which it went down. At the height of about four inches above the ground, I found several larvæ in different stages of growth, from five-eighths of an inch to a full inch in length, the anterior portion of the worm invaria-

bly upward. This was in the latter part of April. I found at the height of six inches larger holes, evidently those of exit, in old canes, with particles of the pupa shell in the orifice. I also believe that the insect is preyed upon by a parasite, as in some old canes I found some whole pupæ with the hole of a parasite."

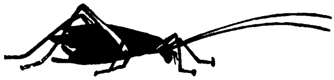
Mr. Muhleman found that they were more injurious to his Lawtons than his Kittatinnys.

Mr. Theo. Engleman, Muscotah, Illinois, has also had some sad experience with this borer, and very naturally writes me that it is the same insect that infests the peach roots (which at a glance it very much resembles.—SEC'Y), for the reason that these raspberries were close to the site of an old peach orchard that had been ruined by borers. This inference was very erroneous, and raspberries might be surrounded with peach trees infested with borers without receiving any injury from the same, and *vice versa*, for the two borers are specifically distinct, and the one never feeds on the food-plants of the other. (The first indication of the presence of this borer is, that of the young growing canes wilting, which is generally attributed to the force of wind, weight of heavy growth of cane, or some accident by which the cane has been partially separated from the crown. I have found this insect working within such canes, and it was evidently the cause of the wilt and subsequent death of the canes.—SEC'Y.)

TREE CRICKET.

(*Œcanthus niveus.*)

This insect is represented at Fig. 15 (female). The general color is a delicate greenish, semi-transparent white, though some specimens have a blackish shade. The female deposits her eggs in grape, raspberry and blackberry canes, in the twigs of the peach, white willow, and a variety of other trees. (Are found very plentiful in the twigs of apple and pear trees.—SEC'Y.) In depositing her eggs, she makes a straight, longitudinal, contiguous row of punctures, each puncture about the size of that which would be made by an ordinary pin. From each of these holes, a narrow, yellowish, elongate egg runs slantingly across the pith. The canes thus punctured almost invariably die above the punctured part, and the injury thus caused to vines is sometimes considerable.



[FIGURE 15.]

This cricket is aided in its destructive work by another species, which has the same habit, viz., the Jumping Cricket. This last is more robustly built than the former, and is at once distinguished by its uniform light-brown color; and I have good reason to believe that it deposits its eggs in the grape-vine in a row of punctures, each of which is about one-third of an inch apart, and each of which leads to from ten to twelve narrow eggs, about one-tenth of an inch long, and deposited on either side of the puncture, lengthwise in the pith.

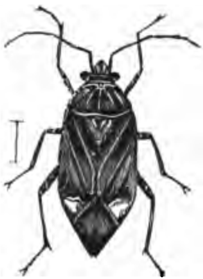
REMEDIES.

The crickets themselves should be captured and crushed whenever met with, while the vineyardist should make a business of searching in winter time for all punctured twigs, and, by burning them, prevent their increase in future.

THE TARNISH PLANT BUG.

(*Capsus oblineatus.*)

This figure (No. 16) represents this bug in a greatly-enlarged form, the hair-line at the left indicating its natural size. This bug is a very variable species, the males being generally much darker than the females. The more common color of this bug is of a dull yellow, approaching to a light russet or brown, and frequently inclines to an olive-green, variegated, as in the figure given, with black and dark brown, and one of the most characteristic marks is a yellow V, sometimes looking more like a Y, or indicated by three simple dots on the scutel, (the little triangular piece on the middle of the back, behind the thorax.) The thorax, which is finely punctured, is finely bordered and divided down the middle with yellow, and each of the divisions contains two broader, longitudinal yellow lines, very frequently obsolete behind. The thighs always have two dark bands or rings near their tips. This plant bug is a very general feeder, attacking very many kinds of herbaceous plants, such as dahlias, asters, marigolds, balsams, cabbages, potatoes, turnips, etc. Its puncture seems to have a peculiarly poisonous effect, on which account, and from its great numbers, it often proves a really formidable foe. It is especially hard on young pear and quince trees, causing the tender leaves and the young shoots and twigs to turn black, as though they had been burned by fire. On old trees it is not so common, though it frequently congregates on such as are in bearing, and causes the young fruit to wither and drop.



[FIGURE 16.]

As soon as vegetation starts in the spring, the mature bugs, which winter over in all manner of sheltered places, may be seen collecting on the various plants which have been mentioned. Early in the morning they may be found buried between the expanding leaves, and at this time they are sluggish, and may be shaken down and destroyed; but as soon as the sun gets warmer they become more active, and, when approached, dodge from one side of the plant to the other, or else take wing and fly away. They deposit their eggs and breed on the plants, and the young and old bugs together may be noticed through most of the summer months. The young bugs are perfectly green, but in other respects do not differ from their parents except in lacking wings. They hide between the flower petals, stems and leaves of different plants, and are not easily detected. Late in the fall, none but full-grown and winged bugs are to be met with, but whether one or two generations are produced during the season has not been fully ascertained, although in all probability there are two.

REMEDIES.

In the great majority of cases we are enabled to counteract the injurious work of noxious insects the moment we thoroughly comprehend their habits and peculiarities, but there are a few which almost defy our efforts. The Tarnish Plant Bug belongs to this class, for we are almost powerless before it, from the fact that it breeds and abounds on such a great variety of plants and weeds, and that it flies so readily from one to the other. Its flight, however, is limited, and there can be no better protective treatment than clean culture; for the principal damage is occasioned by the old bugs when they leave their winter quarters and congregate on the tender buds and leaves of young fruit stock; and the fewer weeds there are to nourish them during the summer and protect them during the winter, the fewer bugs there will be. The small birds must also be protected.

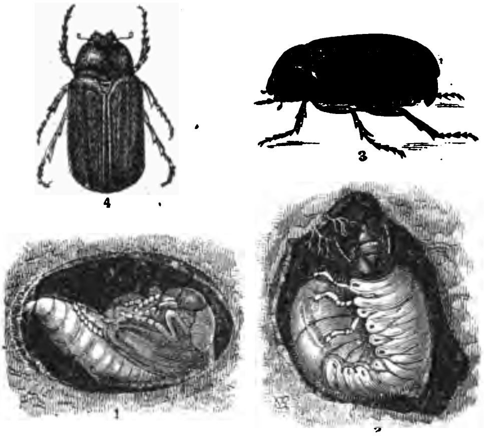
Applications of air-slaked lime and sulphur have been recommended to keep them off; but any application of this kind used, to be effectual, I incline to think should be of a fluid nature; and strong tobacco-water, quassia-water, vinegar and cresylic soap I should recommend. Some persons who have used the latter compound have complained that it injures the plants. Every one using it should bear in mind that the pure acid, no matter how much diluted with water, will separate when sprinkled, and burn holes in and discolor plant texture; while if properly used as a saponaceous (soapy) wash, it will have no injurious effect. It must likewise be borne in mind that the so-called "plant protector," which is a soap made of this same (cresylic) acid, will bear very much diluting (say one part of the soap to fifty or even one hundred parts of water), and that it will injure tender-leafed plants if used too strong. I have noticed that the bugs are extremely fond of congregating upon the bright yellow flowers of the cabbage, which as every one knows, blooms very early in the season; and it would be advisable for persons who have been seriously troubled with this bug, and who live in a sufficiently southern latitude, where the plant will not winter-kill, to let a patch of cabbages run wild and go to seed in some remote corner of the farm, in order that the bugs may be attracted thither and more readily destroyed than when scattered over a larger area.

WHITE GRUB.

(*Lachnostera quercina.*)

The larva of the May beetle.

This insect is represented at Fig. 17 in natural size. The beetles appear in vast swarms during the evenings in the month of May, earlier or later, according to the season or latitude. The beetle is quite voracious, and often greatly injures both fruit and ornamental trees. Their existence in the beetle state is, however, short, and as they are confined to the foliage, their injuries are exceedingly small compared with those which their larvæ inflict



[FIGURE 17.]
In this cut, *1* represents the pupa; *2*, the larva; *3*, side view of beetle; *4*, back view of beetle.

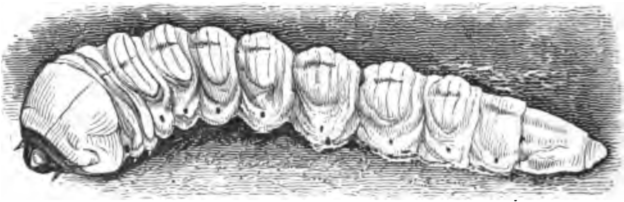
upon us. Our meadows, strawberry beds, corn, vegetables, and even young nursery stock, are all subject to the attacks of these White Grubs, and often are ruined by them. Soon after pairing, the female beetle creeps into the earth, especially wherever the soil is loose and rough, and after depositing her eggs, to the number of forty or fifty, dies. These hatch in the course of a month, and, the grubs growing slowly, do not attain full size until the early spring of the third year, when they construct an ovoid chamber, lined with a gelatinous fluid, change into pupæ, and soon afterward into beetles. These last are at first white, and all the parts soft as the pupa, and they frequently remain in the earth for weeks at a time, until thoroughly hardened, and then, on some favorable night in May, they rise in swarms and fill the air.

REMEDIES.

As natural checks and destroyers of this grub, may be mentioned the badger, weasel, skunk, martin, the crow, and the different hawks, but especially the *ground beetles* among insects. Hogs are fond of them, and a gang may be turned into an infested meadow, which is to be cultivated the next year, with good advantage. (As a light in the night-time attracts the beetle, it is believed that heavy bonfires built around the skirts of the grounds infested, during the month of May, will allure them to destruction.— SEC'Y.)

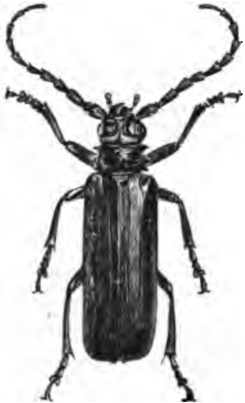
THE NEW GRAPE-ROOT BORER.

(*Orthosoma cylindricum.*)



[FIGURE 18.]
a, Larva.

Figs. 18 and 19 represent this insect in larva (*a*), and (*b*), supposed to be the beetle, or at least similar in many respects, both in natural size and



[Figure 19.]

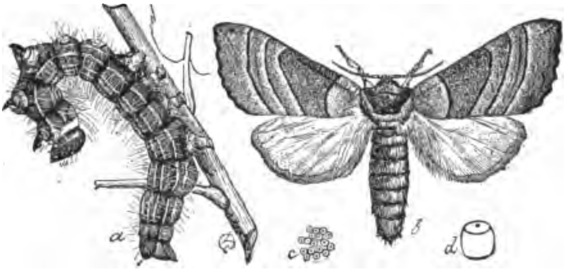
b, Beetle.

color. The average length of the larva or worm, when full grown, is three inches; color, pale-yellowish white, translucent, with glaucous and bluish shadings, and a distinct dorsal line of the last color. The beetle is large, flattened, long-horned, and light-bay colored. (The larva of this insect is very destructive to the roots of young grape vines, yearling seedling apple trees, Osage orange plants, and others. They commence at a point near the surface of the ground, and follow the roots downward, eating as they go, frequently to a depth of ten or twelve inches. In seedling plats, they will follow the row, descending as above stated, and having devoured almost the entire root, will return to within an inch from the surface and push on to the next plant in the row, and so continue until the approach of winter. The first knowledge obtained of its presence is in the tops of plants wilting and then dying. They can easily be checked by following the dying plants. I have often found them midway between the dying and the next living plant in the row. Here is a wonderful instinct in insect life, which enables the worm, while an inch under ground, to follow the course of the row of plants in search of food.—Sec'y.)

THE HANDMAID MOTH.

(*Datana ministra.*)

Description by Cyrus Thomas, State Entomologist of Illinois.



[Figure 20.]

In the above figure, *a* represents the larva or worm; *b*, the moth; *c*, cluster of eggs; *d*, single egg, enlarged.

This defoliating insect is represented in natural size at Fig. 20. ("The larva, called the Yellow-necked Apple-tree Caterpillar, is black, with four pale-yellow stripes upon the sides, narrower than the intervening spaces; upper side of the neck, or first segment, deep wax-yellow; hairs upon the body whitish, about as long as the width of the body."—*Extract from Dr. Le Baron.*) The wings of the moth expand nearly two inches. The fore wings are of a reddish or russet brown, crossed by four transverse lines of a darker brown, with traces of another between third and fourth, and a faint wavy line from the apex toward the middle of the fourth. Hind wings lighter and unmarked. Head, and a space extending round to the middle of the thorax above, darker reddish brown; the rest of the body similar to the main color of the wings.

REMEDIES.

("They are eminently gregarious, and therefore easily controlled. They feed side by side, as closely together as they can stand, and when they are young a whole brood of them can be taken from the tree by removing a single leaf."—*Extract from Dr. Le Baron.*)

Later in the season they come down to the trunk and larger limbs of the tree to moult. At this time they are bound together by a web, and a whole colony can be taken off and destroyed.

(Their whereabouts is easily discovered by the leafless condition of the limbs where they have been feeding. Their appearance in Kansas is generally during the fore part of August.—SEC'Y.)

PARASITES.

(There is a large *Ichneumon Fly* that breeds in the caterpillar of the Handmaid Moth. It resembles at a distance the common mud wasp in form. It hovers around the caterpillar, and frequently alighting upon a leaf close to the worm, waits for a favorable opportunity in which to place its eggs upon the worm. This worm, conscious of the presence of an enemy, at its approach throws its head and fore part of its body rapidly to and fro as if in pain, until the fly either disappears or settles upon a leaf, and then it — the caterpillar — resumes its feeding. This is the favored moment for the parasitic fly, and very quickly it improves it by flying at once to the worm and depositing an egg upon its body, which causes it to begin writhing again, as if conscious of a death-stroke. The fly then passes off, satisfied with its effort, but generally to return again in a few moments to make another egg-deposit upon some other one of the brood of Handmaid Moth larvæ, as there are generally quite a number on the same limb.—SEC'Y.)

THE ROUND-HEADED APPLE-TREE BORER.

(*Saperda bivittata.*)

At Fig. 21 (see p. 189) this borer is represented in its three stages — *a*, the larva; *b*, pupa; *c*, perfect beetle. The beetle may be known by the popular name of the Two-striped Saperda, while its larva is best known by the name of the Round-headed Apple-tree Borer, in contradistinction to the Flat-headed species. The average length of the larva, when full grown, is about one inch. Its color is light yellow, with a tawny yellow spot of a more horny consistency on the first segment, which, under a lens, is found to be formed of a mass of light spots. The head is a chestnut brown, polished and horny, and the jaws are deep black. The Two-striped Saperda makes its appearance in the beetle state during the months of May and June, and is seldom seen by any but the entomologist, who makes a point of hunting for it, from the fact that it remains quietly hidden by day and flies and moves only by night. The female deposits the bulk of her eggs during the month of June, mostly at the foot of the tree.* The young worms hatch and commence boring into the bark within a fortnight afterward. These young worms differ in no essential particular from the full-grown specimens, except in their minute size; and they invariably live, for the first year of their existence, on the sap wood and inner bark, excavating shallow flat cavities, which are found stuffed full of their sawdust-like castings. The hole by which the newly-hatched worm penetrated is so very minute that it fills up, though not until a few grains of castings have fallen from it; but the presence of the worms may be generally detected, especially in young trees, from the bark under which they lie becoming darkened, and sufficiently dry and dead to contract and form cracks. Through these cracks some of the castings of the worm generally protrude and fall to the ground in a little heap; and this occurs more frequently in the spring of the year, when, with the rising sap and frequent rains, such castings become swollen and augment in bulk.

As winter approaches, the young borer descends as near the ground as its burrow will allow, and doubtless remains inactive till the following spring. On approach of the second winter, it is about half grown, and still living on the sap wood; and it is at this time that these borers do the most damage, for where there are four or five in a single tree, they almost completely girdle it. In the course of the next summer, when it has become three-fourths grown, it generally commences to cut a cylindrical passage upward into the solid wood; and before having finished its larval growth, it invariably extends this passage right to the bark, sometimes cutting entirely through a tree to the opposite side from which it began, sometimes turning back at different angles. It then stuffs the upper end of the passage with sawdust-like powder, and the lower part with curly fibers of wood, after which it rests from its labors. It thus finishes its gnawing work during the commencement of the third winter, but remains motionless in the larval state till the following spring, when it casts its skin once more, and becomes a pupa. After resting three weeks in the pupa state, it becomes a beetle, with all its members and parts at first soft and weak. These gradually harden, and in a fortnight more it cuts its way through its sawdust-like castings in the upper passage, and issues from the tree through a perfectly smooth hole. Thus it is in the tree a few days less than three years. It infests apple, quince, mountain ash, hawthorn and pear trees, and Juneberry bushes.

REMEDIES.

This insect has some natural enemies belonging to its own great class, and some of our woodpeckers seek it out from its retreat and devour it; but its enemies are certainly not sufficiently under our control, and to grow healthy apple trees we must fight it artificially. Here again prevention will be found better than a cure, and a stitch in time will not only save nine, but fully ninety-nine. Experiments have amply proved that alkaline washes are repulsive to this insect, and the female beetle will not lay her eggs on trees protected by such washes. Keep the base of every tree in the orchard free from weeds and trash, and apply soap to them during the month of May, and repeat subsequently as often as washed off, and they will not likely be troubled with borers. Soft or common bar soap can be used. The former is perhaps the most convenient, and the newer and softer it is the better. This borer confines itself almost entirely to the butt of the tree, though very rarely it is found in the fork. It is therefore only necessary, in soaping, to rub over the lower part of the trunk and the fork, but it is a good plan to lay a piece of the soap in the principal fork, so that it may be washed down by the rains. But even where the preventive has been used, it is always advisable to examine the trees in the fall, at which time the young worms that hatched through the summer may be generally detected and easily cut out, without injury to the tree.

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*SINCE the above was first published, some facts have been discovered with reference to the oviposition of this saperda, which materially modify these statements. These will be found on subsequent pages, and contain a cut illustrating the placing of the eggs.—SEC'Y.

[Extract from Harris's "Insects Injurious to Vegetation," p. 109.]

"Notwithstanding the pains that have been taken by some persons to destroy and exterminate these pernicious borers, they continue to reappear in our orchards and nurseries every year. The reasons of this are to be found in the habits of the insects, and in individual carelessness. Many orchards suffer deplorably from the want of proper attention; the trees are permitted to remain, year after year, without any pains being taken to destroy the numerous and various insects that infest them; old orchards, especially, are neglected, and not only the rugged trunks of the trees, but even a forest of unpruned suckers around them, are left to the undisturbed possession and inheritance of the saperda. . . . On the means that have been used to destroy this borer, a few remarks only need to be made—for it is evident that they can be fully successful only when adopted. Killing it by a wire thrust into the holes it has made, is one of the oldest, safest and most successful methods. Cutting out the grub with a knife or gouge is the most common practice, but it is feared that these tools have sometimes been used without sufficient caution."

[The following additional matter relating to this borer is from report of Committee on Entomology, of the Douglas County Horticultural Society, on the Round-headed Apple-tree Borer. Reproduced by request, from p. 235, Vol. V, Kansas Horticultural Report for 1875.]

Your committee beg leave to offer the following deductions from their observations of the Round-headed Apple-tree Borer, so destructive to orchard, shade and ornamental trees, during the years 1874 and 1875, in this State:

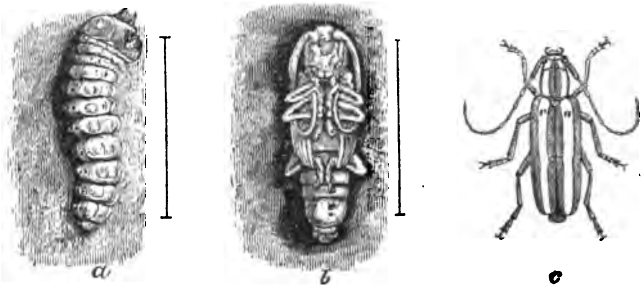
ROUND HEADED BORER.

These have been very numerous in some orchards this year, but such instances are where their destruction in previous years has not been thorough, or they may have swarmed in from neglected adjoining orchards, which have become breeding-dens of all classes of noxious vermin, and scatter the seeds of ruin and destruction among the grounds of the honest, vigilant and industrious.

Your committee are so fully impressed with this great wrong perpetrated upon honest industry in the community, by a class of slip-shod horticulturists—reckless not only of their own interests, but of their neighbors'—that their denunciations of such neglect cannot be too strongly expressed. It is the cause of much discouragement among the intelligent and industrious, and deters many from giving a proper attention to their own grounds for its protection.

The natural habits of this borer are quite the reverse of that first mentioned (the Flat-headed). There is no similarity in the beetle state. (See Figs. 21 and 22.) The most of them mature and are ready to emerge from the tree the first of June, and so nocturnal is their nature, nothing save force can induce them to leave their burrows during the day-time; but as soon as night shuts out the day, they cut away the thin film of bark covering their burrow, come forth, and in a few days acquire strength for the work of procreation. The eggs are generally placed within the bark, at or near the crowns of trees, sometimes among the forks of the branches leading from the trunks, and sometimes in the trunks, when shaded. They require the most of three years to complete their mission from the egg to the beetle. Their course is generally downwards for the first year, and upwards, just under the bark, sometimes within the sap-wood, the fore part of the second year. At the approach of winter, during its second year of life, it cuts a passage into the wood, with the upper end leading out to the bark. At this upper portion, it constructs a bed of fine threads of the wood, firmly packing and filling up with like material the upper end, and there rests, awaiting nature's work of transforming a worm into a higher state of existence — the winged and perfect stage of its life. At the time aforementioned (June 1st), the following season, fully changed and matured, it works its way through the filling of the upper passage to the bark, and cutting through that, it escapes from its prison house. They infest alike healthy and unhealthy trees, and are frequently the cause of their death.

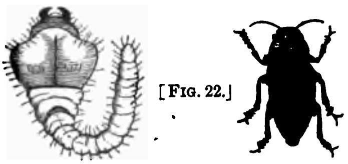
ROUND-HEADED BORER.



Larva. Pupa. Beetle.

[FIGURE 21.]

FLAT-HEADED BORER.



[FIG. 22.]

Larva. Beetle.

The work of successfully combatting this insect is simple, when its nature is understood. Unlike the flat-headed species, it discloses its burrow by throwing out a red dust as soon as it has eaten through the bark, and by this sign it is easily found. A hoe, knife and probe constitute the necessary outfit. With the first, remove the dirt from the crown to the depth of four or five inches; with the knife, follow the places from which the dust has been thrown out, until the worm is found and killed; then scrape off all the dirt and dead bark and examine every unnatural-looking spot, to make sure that none escape. The probe is to be used in the manner as stated in hunting for flat-heads. If the search and extermination have been thorough, draw back the dirt at once, as its moisture and protection from the atmosphere will hasten the healing of the wounds. The first and second week in September* are deemed the most advantageous time for this work, as the worm will by that time indicate its whereabouts by casting out the dust, nor will it have had time since hatching to do much damage. But under no circumstances should it be deferred until a later period. All other jobs should be laid aside until this work is well and thoroughly done.

Your committee are fully sensible that more truths can be imparted in a few moments by the hand of practice among the orchards, than by columns of the most carefully written descriptions; and they are not insensible to the importance of a united action in the work of exterminating all classes of vermin infesting our orchards, gardens and ornamental grounds; that it is almost useless for a single individual to attempt even his own protection, while many around him neglect to do their share of the work.

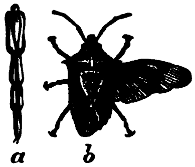
BENEFICIAL INSECTS.

The following—Figs. 23 to 34, inclusive—are all friendly to the pursuit of horticulture, and should all receive the protecting care of man.

SPINED SOLDIER BUG.

(Arma spinosa.)

This friendly insect is represented at Fig. 23, it left wing being closed, while the right one is expanded. Its color is a dull olive, with yellow markings, while the commonly known ***Squash Bug*** hereafter referred to, (and is probably taken for it by many,) is a sober-brown color, and speckled with ochre and yellow, and of a much more slender form. It may be at once distinguished from other bugs of a similar appearance, by the opaque brown streak at the transparent and glassy tip of its wing-cases. This insect is one of our best friends, and is often mercilessly slaughtered for the unfriendly squash bug, which to the uneducated it very much resembles. We can well endure his unpleasant odor, when we reflect on his kind services. Just think of it, you bitter bug-haters! this little soldier has, beyond a doubt, saved thousands of dollars to States by heroically stabbing and slaying countless hosts of one of your worst enemies, the Colorado Potato Bug. It persistently pursues and captures the caterpillar of the Handmaid Moth (an enemy of the orchardist), and the larvæ of several species of cut-worms, and many other insects, some friendly, but annoying to the horticulturist. With its little beak (which, when not in



[FIGURE 23.]

In the above cut, *a* shows the beak, magnified; *b*, the perfect bug.

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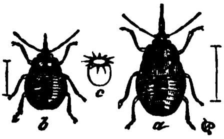
*OBSERVATIONS IN 1879 clearly show that eggs are deposited as late as September 14, which would postpone the work until October 1st.

use, lies close to the under side of its body, extending back between its legs) it pierces the worm and sucks out the juices of its body and throws away the empty skin. I have seen two of these at work at one worm, and the tenacity with which they maintain their grip on the worm, even when disturbed, is remarkable.

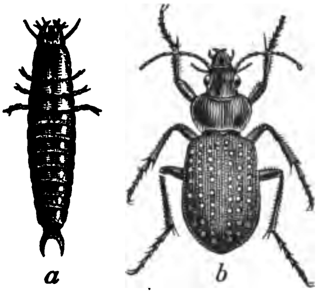
SOLDIER BUG.



[FIGURE 24.]
In this cut, *a* shows the pupa; *b*, full-grown larva; *c*, egg —all magnified.

This insect is represented at Fig. 24. The hair-lines to the right of *a* and to the left of *b*, in Fig. 24, indicate the natural size. The eggs of this Soldier Bug, as I have reason to believe, are pretty little bronze-colored, caldron-shaped objects, with a convex lid, around which ciliate fifteen or sixteen white spines (Fig. 24, *c*). They are neatly placed side by side, in clusters of a dozen or more, to leaves and other objects, and are so much subject to parasitic attacks, that those who undertake to hatch such as are found out-of-doors will more often get flies than bugs. The newly-hatched bug is ovoid and shiny black, with some bright crimson about the abdomen. In the full-grown larva (Fig. 24, *b*) the black still predominates on the thorax, but some four yellowish spots appear, and the abdomen becomes more yellowish, though still tinted with red. In the pupa (Fig. 24, *a*), which is readily distinguished by the little wing-pads, the ochreous yellow extends still more, and finally, with the last moult, the black disappears entirely in the perfect insect. We have been taught to admire the muscular power of the lion, which is able to grip and toss an animal larger than itself with its powerful neck and jaws; but feats performed by these young Soldier Bugs throw the lion's strength completely in the shade, for they may often be seen running nimbly with the larva of a Colorado Potato Beetle four or five times their own size, held high in air upon their outstretched beak.

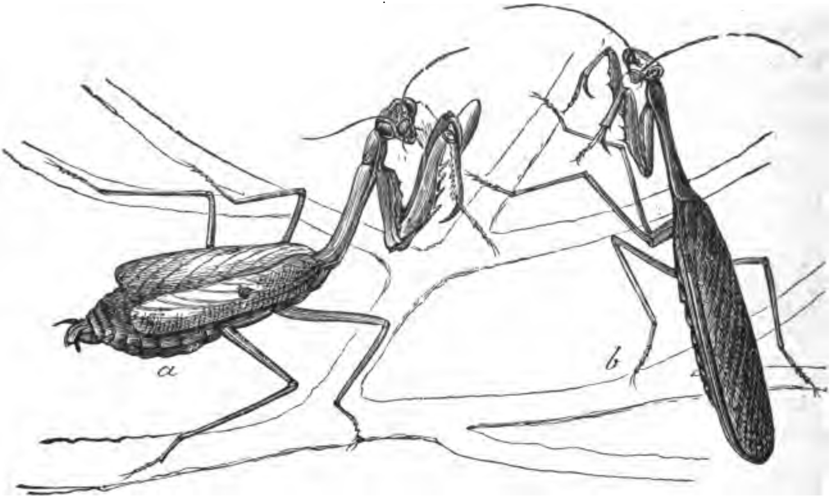
FIERY GROUND BEETLE.
(*Calosama calidum.*)



[FIGURE 25.]
a, Larva. *b*, Beetle.

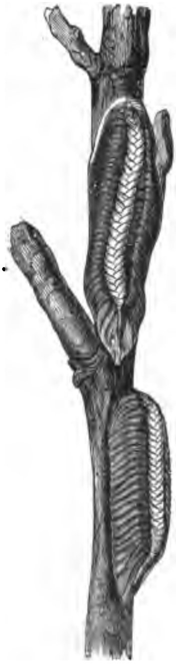
This larva has been very appropriately called the Cut-Worm Lion, by Dr. Shimer, of Mount Carroll, Illinois. The larva of this Cut-Worm Lion (*a*, Fig. 25) has quite a formidable appearance, and is exceedingly agile. It is flattened, of a black color, with six legs upon the breast, and a pair of sharp, hook-like jaws, projecting in front of its head. It pursues the worms in their retreats under ground, and seizes them wherever it comes in contact with them. Sometimes a Cut-Worm Lion will seize a worm twice the size of itself, and will cling with bull-dog tenacity to its prey, through all its throes, its writhings and twistings, till at last the worm succumbs, exhausted, and the victor bites two or three holes through its skin, and proceeds to suck out its juices.

REAR HORSE, *alias* CAMEL CRICKET, *alias* DEVIL'S RIDING HORSE, *alias* PRAYING MANTIS.
(*Mantis Carolina.*)

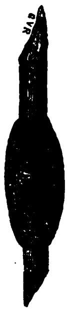


[FIGURE 26.]

Fig. 26 represents both sexes — *a* the female, *b* the male. It will be seen they differ materially from each other. While the male can fly through the air with greater facility than do our grasshoppers, the female is utterly incapable of performing the same feat, and only uses her wings when in battle with one of her own kind, or when pouncing upon her prey, at which time she raises them very much as a swan raises his wings when irritated. The general color of this insect is a grayish brown, though a pale green (dimorphous) form is quite common. About the beginning of August these Mantes acquire wings, and about the middle of September the female commences to deposit her eggs. These eggs are all tightly glued together in a peculiar mass, and are deposited in all sorts of situations, but principally on the twigs of trees. Figure 27 represents two of these egg masses, of natural size. These egg masses are often found by persons in the winter, though very few are able to conjecture what they really are. Some persons confound them with the eggs of the common tent caterpillar, which are represented at Fig. 28, as they appear attached to a section of a limb. Between the 10th and 20th of June, these eggs hatch into comical-looking little mantes, in all respects resembling their parents, with the exception that the young have no wings. The eggs of this insect may be readily transported from one place to another, and the insect can be thus easily colonized.



[FIGURE 27.]



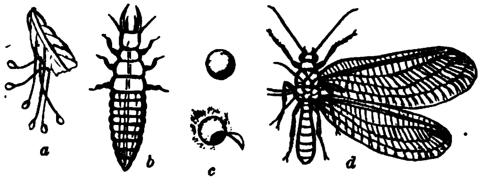
[FIG. 28.]

This peculiar and predatory insect is, very fortunately, common in Kansas, and needs only to be known to be husbanded. Its food consists mainly of flies, although it is most voracious in devouring living insects that come within its grasp, as various kinds of butterflies, grasshoppers, caterpillars, and the Colorado potato beetle. It disdains all dead food, and never makes chase for the living, but warily, patiently and motionless, it watches until its victim is within reach of its fore-arm, and then clutches it with a sudden and rapid motion. Its appearance is really formidable, and its attitude while watching for its prey quite menacing, and on this account it is held in general and superstitious dread. It is, however, utterly incapable of harming anyone, and, as one of our best friends, should be cherished and protected.

THE LACEWING FLY.

(*Chrysopa.*)

This insect is one of the horticulturist's most active aids, and a true friend to his interests. Fig. 29, *d*, represents the perfect or winged form, the wings on the left side being left off to save space. It is of a pale-green color, has four wings resembling delicate lace, and eyes of the brilliancy of polished gold, as its generical name, *Chrysopa perla*, implies; but notwithstanding its delicacy and beauty, it is extremely disgusting from the offensive odor it exhales. It suspends its eggs (see Fig. 29, *a*) by threads, in clusters, beneath the leaves where the plant lice abound. The young or larva, *b*, Fig. 29, is a rather long and slender grub, provided with a pair of large, curved and sharp teeth (jaws) moving laterally, and each perforated with a hole, through which it sucks the juices of its victims. The havoc it makes is astonishing, for one minute is all the time it requires to kill the largest plant louse, and suck out the fluid contents of its body. Prof. Riley says:

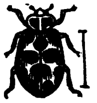


[FIGURE 29.]

> "In its oviposition we see, as everywhere else in nature, an all-wise creative forethought, and a wonderful adaptation to a particular end, in the instinct which prompts and the power which enables the female Lacewing to thus deposit her eggs; for the newly-hatched larvæ are so exceedingly voracious that they would devour the eggs which yet remained unhatched, if they could but reach them. The larvæ, when full-grown, spin perfectly round white cocoons [see Fig. 29, *c*], by means of a spinneret with which they are furnished at the extremity of the body, and they attach them with threads of loose silk to the under side of fences and in sheltered situations. These cocoons are of extraordinarily small size compared with the larva which spins them."

LADYBIRD.

(*Hippodamia maculata.*)

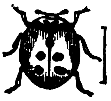


[FIGURE 30.]

This friendly insect is represented at Fig. 30, the hair-line to its right indicating its natural size. It is a quite common insect of a pink color, having ten black spots on its wing-cases. It feeds voraciously upon chinch-bugs, eggs of Colorado potato beetle, and of certain bark lice and plant lice found upon cucumber and other garden vines.

NINE-SPOTTED LADYBIRD.

(*Coccinella 9-notata.*)

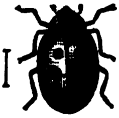


[FIGURE 31.]

This friendly insect is represented at Fig. 31. The hair-line at its right side indicates its natural size. It is of a brick-red color, and marked with nine small black spots. This insect has the same habits as its relative just described.

THIRTEEN-SPOTTED LADYBIRD.

(*Hippodamia 13-punctata.*)



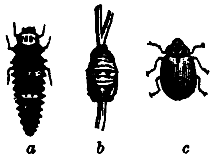
[FIGURE 32.]

This insect is represented at Fig. 32. The hair-line to its left indicates its natural size. It is also of a brick-red color, but marked with thirteen black spots. The habits of this one are similar to those first described.

THE CONVERGENT LADYBIRD.

(*Hippodamia convergens.*)

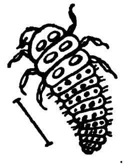
This insect is represented at Fig. 33; *a* indicates the larva in natural size, its color being blue, orange, and black. When full grown it hangs by the tail to the under side of a stalk or leaf, and transforms into pupa, represented at *b*. In this state it is the exact color of the Colorado beetle larva, and is doubtless often mistaken for that larva and ruthlessly destroyed. It may readily be distinguished, however, by its quiescence; and let every potato grower learn well to recognize it, and spare its life. The beetle or winged state is represented at *c*. ("The larvæ of these ladybirds are small, flattened grubs of a bluish or blue-black color, spotted usually with red or yellow, and furnished with six legs near the fore part of the body. [See *a*, Fig. 33.] They are hatched from little yellow eggs laid in clusters on the under side of the leaves."—*Harris.*)



[FIGURE 33.]

In the above cut, *a* shows the larva; *b*, the pupa; *c*, the beetle—all natural size.

The larvæ of all these ladybirds are more blood-thirsty in their habits than the perfect beetles, and the larva of the little Convergent Ladybird is so essentially a cannibal, that whenever other food fails it will turn to and devour the helpless pupæ of its own kind. It is a rather cruel, and withal a cowardly act, to thus take advantage of a helpless brother; but in consideration of its good services, we must overlook these unpleasant traits in our little hero's character. All these larvæ (worms) bear a strong general resemblance, and with the aid of Fig. 33, *a*, and the annexed Fig. 34 (the hair-line at the left showing the natural size), a good idea may be obtained of them. They run with considerable speed, and may be found in great numbers upon almost all kinds of herbage.


[FIGURE 34.]

The eggs of ladybirds greatly resemble those of the Colorado potato beetle, and are scarcely distinguishable except by their smaller size, and by a much smaller number being collected together in a single group. As these eggs are often laid in the same situation as those of the potato beetle, care must be taken by persons who undertake to destroy the latter not to confound those of their best friend with those of their bitterest enemies.

NOTES ON THE APPLE WORM.

BY PROF. C. V. RILEY, WASHINGTON, D. C.

Mr. J. Savage, of Lawrence, Kas., in a recent number of *Colman's Rural World*, remarks upon the freedom of Michigan apples from the work of the apple worm (*Carpocapsa pomonella*) in 1878. This same freedom has been quite generally noticed the present year, not only in Michigan, but in many parts of New York, and it doubtless obtained elsewhere. It will be well for us to endeavor to arrive at the reasons. To my mind, the following may very properly be urged: First, the very general failure of the apple crop in 1877, as exemplified in the reports for that year, which we find both in the proceedings of the Michigan Pomological Society, and in those of the American Pomological Society. This failure was in many localities so nearly total that scarcely any apples were grown, and it follows as a consequence that very few codling moths were produced, to perpetuate the species the following year. A second reason, so far as Michigan is concerned, may be found in the fact that in no State in the Union have more intelligent and persevering efforts been made to prevent its ravages. Through the columns of the agricultural and horticultural journals, as well as in the pages of their Pomological Transactions, the simple methods of fighting this pest that have been reported and recommended in the Missouri Reports have been persistently kept before the people; while Prof. Beal, of the Agricultural College, has perhaps done more good than any one else, by showing that it cost him no more than four cents per tree to keep the bands around the trunks, changing them every nine days in the warm months, from the first appearance of the worms until the end of August, in an orchard of 250 trees. I agree with him when he asserts that "if a man will not take the trouble to keep his fruit from the worms, he deserves to eat wormy apples."

Missouri apple growers should take courage from these facts. Since my connection with the Department of Agriculture, there have been sent to me four different kinds of patent bandages to be used as traps for this apple worm, but I can find no advantages in any of them over the simple paper bandages first recommended by me in 1872, and since very generally employed.

I have the following letter, in reply to one of this office to the Secretary of the Michigan Pomological Society, with reference to Prof. Riley's theory. —SEC'Y.

MICHIGAN STATE POMOLOGICAL SOCIETY,
SECRETARY'S OFFICE, GRAND RAPIDS, March 3, 1879.

G. C. Brackett, Lawrence, Kas.—MY DEAR SIR: Our apples were freer from the Codling Moth or Apple Worm in 1878 than for many years prior. Some attribute that condition to the fact that in 1877 the crop of apples was nearly a total failure, and therefore there was no chance for the moth to multiply itself. This position is hardly tenable, because there were plenty of rosaceous plants that did fruit, and that insect is pretty good to adapt itself to circumstances.

Our people are adopting the "band" method of fighting them, generally, but I am far from being satisfied that this accounts for the freedom of our fruit from their depredations last year. My own impression is, that climate had everything to do with it. The winter and spring were exceedingly unfavorable to them. I found hundreds of them, (the moth,) hatched out in warm days during the month of February, and of course all of these died from exposure to the cold weather following; so that if my hypothesis be correct, it will not do to depend upon such natural agencies in carrying on the warfare, for we have not yet learned how to manipulate the weather in our favor.

Yours, cordially, CHAS. W. GARFIELD, *Secretary.*

NEW FACTS ABOUT THE ROUND-HEADED APPLE-TREE BORER.

BY PROF. C. V. RILEY.

[Clipped from the New York Weekly Tribune, of February 20th, 1878.]

Notwithstanding all that has been written of the Round-headed Apple-tree Borer (*Saperda bivittata*), its eggs have never hitherto been described, nor its mode of oviposition known. This enemy is comparatively rare in most parts of Missouri, the Flat-headed Borer (*Chrysobothris femorata*), being far the most injurious. The former is, in fact, much more common on flat prairie loam than on hilly and more clayey soils. From observations of G. C. Brackett, of Kansas, and J. W. Robinson, of Tremont, Ill., who have had a very large experience with this insect and its eggs, I am able to give the following account: The egg is pale rust-brown in color, one-eighth of an inch long, one-third as wide in middle, flattened so as to have a depth of about one-third the width. The shell is fairly tough and resisting; it is not sculptured, but is sufficiently plastic, when laid, to receive impressions from the wood fibers between which it is pressed. The embryo lies straight within the shell, and the newly-hatched larva differs from the full-grown larva in size alone. The female beetle makes an incision in the bark, causing it to split from one-fifth to sometimes half an inch. The incision is often made entirely through the bark, and the egg is thrust between the bark and the liber at right angles to one side of the slit, from one-eighth to one-quarter of an inch from the aperture. Sometimes the bark is but partially penetrated, in which case it is pried open to one side of the aperture for the reception of the egg. In either case the egg is accompanied by a gummy fluid, which covers and secures it to its place, and usually fills up the aperture. In young trees with tender bark the egg is usually thoroughly hidden, while in older trees it is sometimes so shallowly imbedded as to be readily seen. The horny ovipositor of the female beetle is withdrawn and invisible in repose, but may be exserted. It is broad, flattened, with a thin edge. It is probably strong and sharp enough to penetrate soft bark without any previous work of the jaws, as I can find no sure indication of mandibular action in the punctures examined.

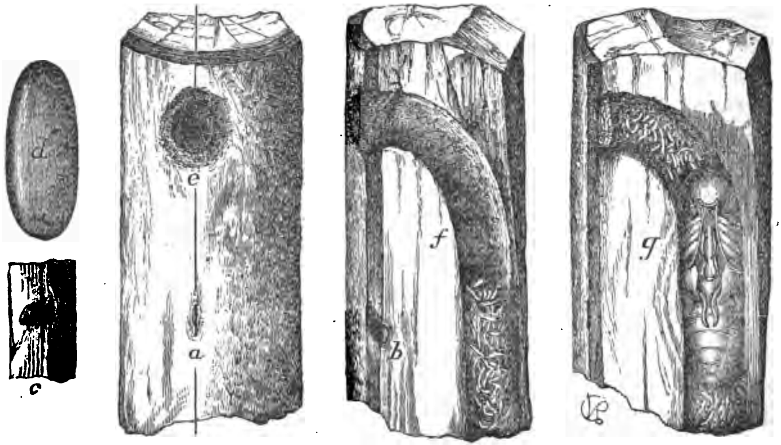
Mr. Brackett has also shown conclusively that the eggs may be laid as late as September, and not unfrequently in the trunk and larger limbs. I have myself recorded the beetles as occurring as late as August in St. Louis, but the fact nevertheless remains, that in that latitude they appear most abundantly, and lay most eggs, in June; also that the butt of the tree is preferred and most affected by the species. This agrees with the experience of Mr. Robinson, Mr. Wier, of Lacon, Ill., and others. Mr. Brackett makes one deduction from his observations with which I cannot entirely concur. He argues that washes and external applications cannot "practicably be reliable against the deposit of eggs," giving as his reason that the eggs are so securely hidden under the bark that such washes will not reach them. Applications of soap and alkaline solutions have been recommended by entomologists and have been found effectual when intelligently and diligently applied, not as destroying the eggs after they are laid; but as preventing the female beetle from laying; and herein lies the philosophy of their use. Mr. Brackett further argues that the lengthened laying season —from June to September—renders the effectual protection of the tree impracticable, even if the applications do keep the beetle off; and finally, he expresses the belief that if she be kept off the butt, the trunk and the base of the larger limbs, she will select places still higher up on the tree in which to oviposit. As a result of this kind of reasoning, he recommends to his brother nurserymen and fruit growers that they allow the beetles "the privilege of following the instinct of their nature in selections of place, and that we depend for their destruction upon a careful examination of the trees, and prompt use of the knife and probe." A careful man like Mr. Brackett may find such a course safe enough, for where the ground is kept clean and the trunks in good condition, the punctures may be readily discerned. The eggs swell somewhat before hatching, and cause the bark to bulge around the aperture. They may easily be crushed by pressure, when they crack audibly. If the larva has already hatched, the discolored spot indicates its whereabouts. A drop of moisture or the sawdust-like castings betray its presence a little later, when it has begun its destructive work. Mr. Robinson says that he habitually crushed and destroyed from one to ten eggs each year on many hundreds of his trees while they were young.

But while this means may answer with some persons, I would still recommend preventive washes, to be followed by the careful examination of the trees, and knife and probe when found necessary. The preventive precautions reduce the subsequent work to a minimum, and prove one of the cheapest and best modes of fighting this insect, especially if one has to hire the work done. Again, it is useful against the flat-headed species, which is not so easily kept in check with knife, probe, or thumb-nail. It is also far more in keeping with known facts and experience that, if driven from the trunk and butt of a particular tree by (to her) offensive applications, the female beetle will seek like situations on other trees not so treated, than that she will oviposit in the branches. If all orchardists in a given neighborhood were to systematically adopt preventive measures, and if there were no wild crabs, thorns or other trees in the neighborhood in which the species could breed, the female might be driven to the branches of the cultivated trees. But such a condition of things has not yet obtained, within my experience, in any part of the country, and were it to obtain, the injury to the branches would not begin to be so fatal to the tree as the girdling and boring at the butt.

NOTE.—From observations in this county (Douglas), but very little difference in the amount of eggs deposited exists during the latter part of July, and through the month of August and fore part of September, and very few eggs have been found during June and fore part of July.—SEC'Y.

The following is the report referred to by Prof. C. V. Riley, in the foregoing remarks:

REPORT OF THE COMMITTEE ON ENTOMOLOGY, IN THE DOUGLAS COUNTY HORTICULTURAL SOCIETY, SEPTEMBER 15, 1877.



[FIGURE 35.]

Oviposition and exit of the Round-Headed Apple-Tree Borer: *a*, wound where egg is deposited; *b*, same, with the wood split lengthwise along the line (*a*, *e*), and turned so as to show an egg in place; *c*, same, with the bark split on the same line and removed to the left, so as to show the manner in which the egg is commonly thrust to one side under the bark; *d*, the egg, enlarged; *e*, hole of exit of beetle; *f*, the same, as it appears from the side when split along the line (*a*, *e*); *g*, the burrow, as it appears while the insect is in the pupa state, and before the bark is perforated.

The committee, G. C. Brackett, chairman, said: We desire to-day to establish positions I have heretofore taken relating to the Round-headed Apple-tree borer, by specimens which were taken from my apple trees.

First—That the eggs of this insect are deposited as late as the middle of September.

Second—That these eggs are deposited within and under and not upon the surface of the bark, as we have been led to believe by the statements of some scientific men.

Third—That this insect does *not invariably* place its eggs at or near the crown, nor in the axis of the limbs, but quite often in the bark, along the body and large limbs, without regard to shadow or shelter, entirely.

Fourth—That washes and external applications are not nor can practicably be made reliable, as against the deposit of eggs.

In support of the first position.—We have here, and offer for your examination, sections of bark taken from trees only yesterday (September 14th) containing unquestionably the eggs of this insect, and by aid of the magnifying glass you will perceive that they are not aborted, but in a healthy condition.

To the second position.—We have here for your examination, sections of the bark, showing the external appearance beneath which you will find the eggs, and in some of them the infant borer; one just out of the egg-case, and which has hatched within twenty-four hours, and since the egg was placed in this little box, and another just escaping and not entirely out of the egg-case. An incision is made varying in length from one-fourth to one-half an inch, in some specimens, and oftener than otherwise entirely through the bark, and the eggs are laid to either side at right angles to this aperture, from one-eighth to one-fourth of an inch. Some few specimens were found, and we have here a specimen, where the incision was made not entirely through the bark; the bark has been split, and the egg laid in same relative position to the aperture, but within the bark.

Third position.—Some of these specimens were taken from open and exposed trees, and from places on the tree exposed to the sun's direct rays. We will admit that in seasons heretofore generally the eggs have been found placed near the ground, or in covered places on the body; that the cases here mentioned are exceptional.

Fourth position.—As will be seen, the eggs are so securely placed under the bark and to a distance one side of the aperture, which becomes closed, as to render it quite difficult to follow it were it not for the discoloring of the bark; therefore I am satisfied that no wash can be made, not injurious to the tree, which would prove destructive to the egg or infant worm, nor that any substance can be made practically an effectual resistance to the approach of the female beetles, when we consider the long period (June to middle of September) during which the trees are exposed to their deposits; and should we succeed by the use of offensive washes and external appliances in driving the female beetle from the bodies and base of the large limbs, I am of the opinion that they can and will select other places, even higher up, in which to place their eggs. Therefore, I would suggest that it is better to allow them the privilege of following the instincts of their nature in selections of place, and that we depend for their destruction upon a careful examination of the trees, and prompt use of the knife and probe.*

G. C. BRACKETT,
T. M. PIERSON,
N. P. DEMING,
Committee.

NOTE.—Referring to the fourth position in the foregoing report, and the statement therein as quoted by Prof. Riley, as to the "impracticability of washes," I will give the following reasons for such a conclusion:

1. In an orchard where the trees have attained to the dimensions which ten to twenty years of an average annual growth would afford, the amount of surface required to be washed would be immense in a large orchard, and proportionately so even in a small one, which alone would render such a method objectionable.

2. Washes as a protection from the Flat-headed species must be applied not only to the bodies and base of the limbs, but also to all the sides of limbs exposed to the sun, which are favorite resorts for oviposition with this insect, and such exposed places are as often ten or twelve feet from the ground, and upon the upper sides of the limbs, as in any other part of the tree; therefore the labor required to make a thorough application of the proposed washes becomes a heavy and unnecessary expense, and is discouraging to the orchardist. The more simple and yet effectual the means are, recommended for the protection of orchard trees from the attacks of noxious insects, the better.

3. The properties of such washes fail in a short time, under climatic influences, and require to be repeated several times during the season of egg-placing, which, with the Flat-headed species, lasts about three months, and with the Round-headed species (according to Prof. Riley's report) would continue from June to the middle of September, fully three months; and then, after all the expense in time and labor in washing, to make thorough work, as is admitted in the foregoing article, an examination of the trees and use of a knife must be resorted to, to make thorough work.

4. A knowledge of the habits of these insects is easily acquired by any ordinarily-observing man, and by that knowledge the work of an examination of the trees can be made easy, rapid and thorough, and can be done in half the time of the washing method.

I can but look upon such methods as EXTREMELY EXPENSIVE and anything else than RELIABLE, and so far as my knowledge of men extends, nearly if not quite all of the most thoroughly practical and "INTELLIGENT," having had experience with methods for protection from the attacks of these species, have abandoned all others save the use of the knife and probe at the proper time.—SEC'Y.

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*THE observations and experiments during 1878 and 1879 fully confirm the fourth position.—SEC'Y.

THE OBLIQUE-BANDED MOTH OF THE ROSE TRIBE.

(*Loxotænia Rosaceana*, Harris.)

During the summer of 1879, for the first time, the larva of this insect was found tying the edges of the leaves of my strawberry plants together with a fine, web-like thread, and living within the tenement thus formed, was devouring voraciously the filament of the leaf. They were found clustered in families of fifteen or twenty individuals, but only one occupying each leaf. From specimens of the larva I bred the moth, which came from the chrysalis August 9th. Specimens of the moth were sent to Prof. F. H. Snow, of the State University, for determination. In reply, the following letter was received.—SEC'Y.

UNIVERSITY OF KANSAS,
LAWRENCE, KAS., Jan. 23, 1880.

GEO. C. BRACKETT, ESQ.—*Dear Sir:* The "large moth," whose determination you request, is the Rose and Apple-leaf Roller, as described by Harris, ("Insects Injurious to Vegetation," pp. 480, 481,) and named by him *Loxotœnia Rosaceana*, or the "Oblique-banded moth of the Rose tribe." He speaks of its larva as follows: "Early in May, or soon after the buds of the apple tree begin to open, these little caterpillars begin their labors. They curl up and fasten together the small and tender leaves that supply them both with shelter and food, and in this way they often do considerable damage to the trees." He speaks of this species as feeding upon the foliage of oak trees, as well as that of apples and roses, but makes no mention of the strawberry as one of its food-plants. I find, however, that Packard, in his "Guide to the Study of Insects," writes of this same species as follows:

> "The larva early in June binds together the leaves of the rose, apple, and *strawberry*. It is plump and rather large, of a pale-yellowish green. We found on the 23d of June the fully-grown larva on the leaves of the strawberry, doubling them up and binding them together by a few silken threads. The worm is pale-livid, greenish and paler beneath, with a conspicuous black dot on each side of the hinder edge of the prothorax. The head is very pale honey yellow, with two black spots, one near the insertion of the mandibles and the other on the side, near the base of the head. The posterior half of each segment is transversely wrinkled a few times. The body is scattered over with a few minute tubercles, each giving rise to a fine hair. It is .80 of an inch long. One specimen spun its light cocoon on June 26th, the pupa appearing June 30th. The pupa is pointed on the vertex of the head, and on the back of each abdominal ring are two rows of spines. The moth usually appears the last of June."

Harris, in his description of the moth, says:

> "The fore-wings of this moth are very much arched on their outer edge, and curve in the contrary direction at the tip, like a hook or short tail. They are of a light cinnamon-brown color, crossed with little wavy darker brown lines, and with those broad oblique dark-brown bands, whereof one covers the base of the wing, and is oftentimes indistinct or wanting, the second crosses the middle of the wing, and the third, which is broad on the front edge and narrow behind, is near the outer hind margin of the wing. The hind wings are ochre-yellow, with the folded part next to the body blackish. It expands one inch or more."

I have for several years taken the moth of this Leaf Roller in Douglas county. It appears to be quite common, and is briefly mentioned in my "Catalogue of the Lepidoptera of Eastern Kansas," (No. 479.)

The fly bred by yourself from the cocoon of this Leaf Roller, and resembling a common house fly, is a species of *Tachina* fly, by which the cocoon had been parasitized. It is a bitter enemy of the Leaf Roller, and correspondingly a friend of the horticulturist.

Very truly yours,
F. H. SNOW.

SMALL-FRUIT CULTURE.

BY J. W. LATIMER, PLEASANTON.

The year 1879 was very unproductive of this class of fruits, caused by the extremely unfavorable conditions of weather of the previous summer and autumn, combined with the low temperature of the following winter. At the opening of the spring of 1879, blackberry and raspberry canes were generally found to be dead to the snow-line. Notwithstanding this discouraging state of things, much interest is still manifested in the planting and continued culture of blackberries, raspberries and strawberries.

VARIETIES.

Of seven varieties I have vested, viz., Dorchester, Wilson's Early, Missouri Mammoth, Newman's Thornless, Lawton, Crystal White and Kittatinny, I find only the last named profitable, which, even in the unfavorable year 1879, produced about one-fourth of a crop, while the canes of all others were killed to the snow-line.

Of raspberries, the Dolittle, Miami and McCormick, of the black-cap varieties, are worthy of a place in every collection. Of the red varieties, the Turner and Purple Cane are the only ones of any profit. The Turner promises to be a valuable introduction to our State list.

Of gooseberries, the crop was very light. The Houghton only has proved valuable. The Downing and Smith's Improved are on trial.

The currant requires too much care and special treatment to be profitable. When planted on the north side of a stone wall, or tight board fence, it produces fine fruit, but the effort to grow it in the shade of living trees is a failure. No one should recommend such culture.

The Dwarf Serviceberry has been cultivated at Mapleton, Bourbon county, for the past fourteen years, and has never failed to produce a full crop of fruit, excepting in 1874. The fruit is highly prized by some people, and is considered very wholesome. It is worthy of more general cultivation.

The strawberry crop was a failure in 1879, caused by the unfavorable weather of the previous autumn. The only crops produced were by beds well mulched.

The Wilson's Albany still retains its place at the head of the list.

PLANTING AND CULTIVATION.

The soil should be well prepared by deep plowing or spading, and made rich with compost, or well-rotted manure. Strong, healthy plants are always to be preferred for planting.

Blackberries should be planted in rows, seven feet apart, and three feet in the rows.

Plant the bow-cane raspberries the same as blackberries; the upright growing varieties in rows, five feet apart, and three feet in the rows. Treat the suckers as weeds, by keeping them cut off.

Gooseberries and the Dwarf Serviceberry should be planted about five feet apart each way, and held to stools.

Strawberries are most successful when grown in hills. All classes of small fruits should be kept clear of weeds, and thoroughly cultivated. Mulching affords profitable returns for all expenses of such treatment.

Blackberry and raspberry canes produce most fruit when clipped two and a half feet from the ground, and the laterals clipped at eight inches from the canes. This causes them to grow stocky, which largely prevents their being swayed to and fro by the winds.

GARDEN VEGETABLES.

BY WM. CUTTER, JUNCTION CITY.

I am now paying very little attention to this business, and have no liking for it. This you can easily account for, when you are told that one of my early ancestors was severely punished, once upon a time, for violating the rules of *the garden*.

Garden vegetables are an indispensable necessity in every household. None so well as those who have them growing in their own gardens can appreciate the health and happiness that flow therefrom. More especially is a garden indispensable in our new country. It supplies us in a few weeks, or months at most, with vegetables and fruits, which, to say the least, are an excellent substitute for the fruit of orchards, which it takes years to produce.

To turn over our rich prairie sod in June, and replow it late in the fall, is the best preparation that can be made. On such ground I have always produced earlier, better, and usually more vegetables, than on old manured land. Heavy manuring to produce early vegetables is a great mistake.

I shall not on this occasion attempt to give a list of or mode of cultivating all the vegetables that do well in our State. Neither shall I spend much time on the propagation of plants, but will confine my remarks to a few of the most useful. Of these, the tomato is deserving of a prominent place. The first of May is as early as it is safe to set plants in the open garden. For early fruit, set the Conqueror or Canada Victor, in unmanured land, on slightly raised ridges, three feet by twenty to twenty-four inches; stake with short brush, and cultivate shallow. For the main crop, plant the Trophy, in rich soil, four by six feet. A mulch of coarse manure or rotten straw will prove very beneficial, especially so during a dry season.

Everybody should sow a patch of early turnips. They sell readily in market, and are sweet and good for the table. Prepare your patch by shallow fall-plowing; sow broadcast in February or early in March. Mix in some radish seed, and you will be astonished to see how soon you will have them fit for use. Don't manure, or they will run too much to top.

The same directions, with the addition of a top-dressing of ashes, will raise you better cabbage plants than it is possible to raise in any other way. If you are in a hurry, set some hot-bed plants, but don't be surprised if the out-door plants catch up with them. Owing to the difficulty in raising a crop from late sowing, I have adopted the plan of sowing some of the latest varieties early in the spring; letting the plants get rather large, set wide apart, cultivate well, and they will grow to a very large size, and last all through September. Always plant some late in June. They will head well, if July is favorable. Always manure heavily for late cabbage. If plowed in, and replowed once or twice, so much the better. For the very earliest plant, take the Little Pixie and Early York; but they are not to be tolerated after the Winningstädt and Fotler are in market. For winter use, the Stonemason and Flat Dutch are the best.

Peas should be sowed by the first of March, in furrows six inches deep and five feet apart; sow thickly and plow under. Use Extra Early Philadelphia, Carter's First Crop, and Laxton's Alpha, for early, and Champion of England for late. Stake if land is scant; if not, sow plenty of them, and "let them rip."

Beans are very uncertain, even with the best of care.

Beets should be sown the last of April, in deeply prepared soil. Thin to one foot. The Egyptian Blood is the best early. The Bassano for using top and all; and the Long Blood and Bastins, half long blood, for general crop.

Early-planted potatoes have done best for several years. The Early Rose is still the best of its season; the Snow Flake the best flavored, and Brownell's Beauty the most productive. The Peach Blow appears to be "played out." Manuring increases the yield at the expense of the flavor. Plant one piece in a hill, two feet apart in the row. Harrow well just as they come up, and use the cultivator freely; or still better, mulch with straw or hay sufficient to keep down weeds.

Sweet potatoes do best on new and rather sandy land. Throw up low ridges. Leave the center hard, and the potatoes will not grow so long and slim. Set as soon as you can after the danger of frost is over. All things considered, the Brazilian White is the best. The Yellow Nansemond is a richer, sweeter potato, but does not yield over half as much. The Southern Queen and Bermuda may yield more, but they hardly deserve the name of sweet potato.

For melons, use new land if you can get it; if not, plow in plenty of manure. Plant watermelons eight by eight feet. Thin to one plant. Cultivate shallow, and keep the ground as level as you can. If you want them early, manure a little in the hill only. Plant four by four, and leave two in a hill. There is seldom anything gained by planting before May, and even June. Planting on sod ground will usually raise the largest melons. The Phinney is about our best early, and the Gipsy the best late melon. Of muskmelons, the Nutmeg and Cassaba are the best.

HANDLING AND MARKETING FRUIT.

BY D. G. WATT, LAWRENCE.

After reading the report of the committee for 1878, I find there is but little to be said. The great question with all fruit growers for market is, "How can I make the most money out of my fruit?" I would answer by saying: watch the market in different towns (for there is where it all goes), and put it on the market in neat and clean packages, in the best possible shape, and keep all of your small, knotty, gnarly and unsound fruit at home. By doing this, I think it will give general satisfaction.

I will take the different classes of fruit as they come in their season:

Strawberries are the first fruit of the season. Being of a soft character, they should be handled with great care from picking until they are placed in the market. They should always be picked by the stem (and not pulled, as is generally done), leaving abcut one-fourth of an inch of the stem on the fruit. This is easily done with the thumb or finger-nail, being careful not to press or bruise the berries. Do not throw, but lay them carefully in the box. Use quart boxes. For shipping, care should be taken to pick such as are just colored, and never put a berry in a box with the stem pulled out. Send all over-ripe or soft berries to a home market. Pickers should have three boxes when picking for shipping—one for shipping berries, one for home market, and one for those that are not fit to send to market. All damaged berries, no matter how large, should always go in No. 3 box, or be thrown away. Put the larger berries in the bottom of your box, instead of at the top. The better way is to let the facing be an honest representation of the entire box. Face your boxes as you pick, and be sure that the top of the box is no better than the bottom. Always fill the boxes above the rim. If you do this you need not be ashamed to put your name on the boxes.

The *Cherry* comes in with the last pickings of strawberries. As they ripen nearly all of their fruit at the same time, the man who has a large crop rushes them upon the market. I would say, don't be too fast; take a little time, and see that they are put on the market in good shape. This fruit must be picked with the stem on, and placed in quart boxes. Carry from the pickers to the house and look them over; throw out all damaged and unsound fruit. In filling, shake the box two or three times, to settle them. When the box is filled within an inch of the top, turn all the stems down. This will make your cherries look 40 to 50 per cent. better than when they come from the pickers. Always fill the boxes above the rim.

The *Raspberry* and *Blackberry* require about the same care and management as the strawberry, with the exception that they are picked without the stem and do not need facing in the box, for shipping. Pickers should use two boxes. Put none but firm berries in the boxes for shipping, and the soft ones in the other. The latter can be used at home, or sold in the home market to a better advantage than the hard berries.

Shelter all kinds of fruit from wind and sun as soon as picked. All classes of berries for market should be picked in pint or quart boxes and put up in crates holding twenty-four boxes. Boxes and crates for all kinds of fruit should be perfectly dry when used, to prevent mould and rot.

Goosberries I have had but little experience in handling. Those who have grown them say: in picking use a small rake with five or six long teeth and a short handle; place the teeth close so as to hold all the large berries. Attach a small sack to the under side, to receive the berries. Clear out the leaves and all wormy and unsound fruit. Market in clean half-bushel baskets with covers to keep out the dust.

Peaches may be marketed in crates or baskets. I prefer a nice, neat, well-made crate to ship in, that will hold twenty-five pounds. Select firm, well-colored, nice, smooth fruit; sort as to size; place large fruit in one crate and medium in another. It always pays to wrap in paper, the same as for oranges and lemons. In making crates, use nice board ends, and laths for the sides. Be careful to make the cracks one-third of an inch between the laths. If too wide, the peach will cut on the corners of the laths. All soft peaches should find a home market. Never allow a wormy, or the least specked, rotten or scabby specimen to go in either a shipping lot or for home market. If you must sell that kind, by all means sell them in separate lots, if money and reputation are what you want.

Pears.—Mr. Brackett says, "Here we have a broad field for the application of intelligent practice." My practice has been mostly with the tree or in fighting the blight. It is true, in 1878 I had seventeen bushels of fine fruit, and a few good specimens this year. They must be picked with stems on. To ship, pick as soon as seeds are brown; wrap each pear in paper and pack in a crate, same as peaches. For home market, carefully pack in boxes, that will hold from half a bushel to a bushel, lined with clean paper, and close up, to pass through a sweat, which will be in about ten days. Be careful and not let them get too soft before taking them to market, for they soon decay after they become soft.

Grapes should be marketed in nice clean baskets, with lids. Be careful to pick off of each bunch all rotten or damaged berries, and avoid putting in any straggling bunches. There is no need of rushing grapes to market faster than the demand calls for them, as some do. That is what ruins the market—by causing low prices.

Apples.—This is the staple, and, I might say, the king of all fruit, as there is more money in it than in all other fruit. All classes of apples must be taken from the tree with stem adhering. The apple should be taken in hand with the thumb resting on the base of its stem, and by a turn of the apple over the thumb, it is easily separated at the base. Pick in baskets, and, when full, empty into a wagon-bed, which should be lined with hay; an old blanket, or something of that kind, is more desirable. Take to the packing-house or cellar, if they are to be stored; assort as they are unloaded. All inferior and defective fruit should be sent to the cider mill. No matter how large or fine the specimen may be, if there is any breakage in the skin, reject it from either grade. Grade your apples Nos. 1 and 2; each grade should be composed of only sound fruit. Have each grade as even as possible in size, regardless of color. Apples should be handled like eggs, so as not to break the skin or bruise them. Summer and autumn varieties are generally of a more delicate character than winter, and need more care in handling. In shipping the summer and autumn apples, I would recommend crates made with board ends and sides of laths; the ends 11x14 inches, and the laths sawed in two in the middle will give the proper length. The laths should not be over half an inch apart; if more, the corners of the laths will cut the apples. A crate of this size will hold about fifty pounds, or a little over a bushel. They should be made neat, and well nailed. Crates of this size are easily handled, and store nicely in a wagon or car. Care should be taken, in packing, to get them tight in the crate. Picking can begin as soon as the apples are colored. The price depends upon the color to a great extent. A high-colored apple will always sell for more at the fruit stands than a green or a dull-colored one, without regard to quality. Fruit at this stage keeps better and bears transportation better than when riper. If late fall and winter varieties are to be marketed in bulk from the orchard, they should be put in heaps under and in the shade of the trees, and assorted when put into the wagon to be taken to market. If the crop is to be shipped in the fall, it should be assorted and packed in barrels. A layer should be carefully placed at the bottom of the barrel, all facing stem-end down; fill up the barrels to fully one layer above the rim; press down with screw or lever, and head up. Don't do as most of the Michigan and New York fruit men do—put a few layers of nice apples in the bottom of the barrel, and fill in with cider apples until you get within a few layers of the top, then fill out with large ones again. I would say to the man or woman who wishes to make fruit growing pay, and make a reputation so that his or her name on a crate or barrel will sell the same, you can't be too careful in picking, assorting and getting it to market in good shape.

I am sorry to say that the time has been when the man who backed his wagon under the tree, and knocked his apples off with a pole, got about as many cents per bushel as the man who took the greatest of care in picking; but I think that time is about past. Mr. Brackett says: "Be not guilty of sending unsound and wormy fruit into the markets." From my observations, I think he is mistaken in regard to wormy apples, for I find that our dealers send all the way to Michigan and New York for that kind. They must find customers that like that class of fruit, for they have to pay more (as a general thing) for the Michigan and New York fruit than they would for a good home-grown fruit. There is but one way that I can account for this, and that is, they get fresh meat and fruit at the same time and at the same price.

VINE CULTURE.

BY W. E. BARNES, VINLAND.

In a few notes on grape culture in Kansas, I will first give my own experience. My vineyard comprises about seventeen acres; principal variety, Concord; first vines were planted in 1857, with additions yearly till 1867, when the largest number were planted. Soil mostly clay loam, with a few acres of a sandy nature. Elevation, fifty to seventy-five feet above the surrounding bottom lands. Vines planted 7x7, trellised with wire four to six feet high. I have no regular system of pruning, but aim to leave sufficient bearing wood, evenly distributed over the trellis, the amount varying in different years according to growth the previous season. I cultivate by plowing once a year, late in fall, or after weeds start in the spring, throwing the earth towards the rows. Then use a one-horse cultivator the rest of the season, with hoes to clear around the vines. This vineyard produced abundantly until 1875, when the bloom was destroyed by grasshoppers, and since that time the rot has injured the crop more or less every year, and seems to be caused by excessive moisture in the soil, combined with high temperature; is most prevalent in low parts of the vineyard, which has the richest soil and largest growth of wood. The vines are mostly surrounded by orchard trees and timber belts, which are no doubt injurious, by preventing a free circulation of air. Those freest from disease are growing on the thinnest soil, fully exposed to the southwest wind, and those upon the borders where the earth is penetrated by roots of the surrounding trees, which serve to check the growth of the vines. Last season I left, for an experiment, several rows of the thriftiest vines unpruned; these produced a large crop, but the bunches and fruit were very small, indicating that good results would be obtained by light pruning.

Among the first vines planted were a few Dracut Amber; have now about one acre. This grape has always done well, though somewhat foxy in flavor; is a profitable and desirable variety for market and family use; rots less than the Concord. Ives is a profitable grape for this section; should be allowed to hang on the vines ten days or two weeks after coloring; flavor not so good as Concord; valuable for marketing, both early and late. So far as I can learn, it never rots. Norton's Virginia succeeds well. Hartford Prolific drops from the bunch. Delaware succeeds only on limestone soils; fruit should be thinned out, as it inclines to over-bear. The Martha is a slow grower, but hardy and healthy. Lady, planted two years ago, promises well. Diana, Catawba and Isabella, although old varieties, and generally discarded, are worthy of trial, and are worth more than nine-tenths of the new varieties that are annually introduced at fancy prices.

A vineyard one mile distant; elevation about the same as mine, with a thin, dry sandstone soil; eastern slope; vines planted 7x7, trellised about two and one-half feet high; vines allowed to fall down so as to shade the fruit, has produced uniform good crops.

The vineyard of A. McCandless is two miles distant, situated on a high limestone ridge, fully exposed; soil rich and dry; vines 7x7; very little rot. He also grows Ives, Dracut Amber, Delaware and Catawba successfully.

W. H. Gill has a vineyard on the side of a limestone bluff; land formerly covered with wood; vines are closely sheltered from winds by the surrounding trees. His grapes rot badly in wet seasons.

H. C. Carter, of Baldwin City, has a small vineyard on rich, moist soil; situation low, as compared with the surrounding lands; vines are summer-pruned every season by slashing with a corn-knife. These vines have a dwarfed appearance, but produce a good crop annually.

Mr. J. Labarriere, near Baldwin City, has one of the oldest vineyards in the State. Situation, a high limestone bluff, good, strong soil, with reddish clay subsoil. Has experimented with many varieties, including Delaware, Iona, Eumelan, Israella, and others. Manufactures most of his grapes into wine. He regards the following as most profitable: Concord, Ives, Norton's Virginia, Dracut Amber, and Delaware. Concord rots in unfavorable seasons, and Delaware is not always a success.

O. L. McLane, of Parsons, Labette county, writes as follows in regard to grapes in his section: "I find by observation that most people trim too much; where the vines are trimmed lightly they produce best, and it has become a saying, 'If you want grapes, you must throw away your knife.' The Ives bears nearly every year, and is the grape for this county; the Dracut Amber suffers less than the Concord; the Delaware does very well; and the rest are of no value here, so far as I have been able to judge."

If about to plant a vineyard, I would select a dry soil with airy location, keep all orchard trees and wind-breaks at a safe distance, plant all thrifty-growing varieties like the Concord at least ten feet apart each way, trellis six or seven feet high, prune long, so as to give the vines plenty to do; summer-prune by pinching off the ends of bearing shoots, and remove all suckers. Sometimes too much fruit will set; in that case a part of the bunches should be rubbed off, but no definite rule can be given. I would cease cultivating about the middle of July, except in very dry seasons, when the ground should be kept stirred till grapes begin to color.

FORESTRY DEPARTMENT.

REPORT OF COMMITTEE ON FORESTRY.

BY J. B. SCHLICHTER, STERLING.

My means for observation have been quite limited—at least have not extended over a very large portion of Kansas—but confined principally to the central portion of the Arkansas valley. There is a more prevailing feeling among the settlers of this portion at this time (than ever before), that they should plant trees, not only for ornament and for timber, but for protection from the violent winds—that they must do something to check their accumulating force, which has such a powerful sweep across these treeless plains. This is a good omen. Comparatively very few people have as yet planted anything in the shape of borders or belts; a few have groups about the buildings, and those feel well paid for all the expenses which they have cost them. The growth of trees this season has been less than that of any previous year since the settlement of this country, excepting the year 1874. Those which had a good start (*i. e.*, well rooted), and well cultivated, have done well enough. A small green worm has denuded the Cottonwood trees in some localities this season. The maple worm has never put in an appearance in this portion of Kansas.

I have experimented some with the Black Locust. There is no appearance yet of the borer, so troublesome to this tree in other parts. The tree is as rapid a grower here as the Cottonwood, and stood the drouth of this season as well, if not better.

I notice that according to the last Quarterly Report of the State Board of Agriculture of the State, Kansas has been divided into four timber belts, and the belts have been made to conform to the native timber found growing within their boundaries. This is no doubt a help in ascertaining the kinds of timber best adapted to the different portions of Kansas. According to that report the belts run north and south, which does not seem to be in accordance with the isothermals, nor the plant or climatic zones of our physical geographies, as they in the region of Kansas have a northwestwardly course, deviating considerably northward of the parallels of latitude. The varieties of timber within the bounds of the State of Kansas would certainly be influenced by those lines and zones. There is still another condition which has a great influence upon the growth of timber, and that is the amount of moisture furnished plant growth, either in the atmosphere or soil, or both. It is well known that the amount of rainfall decreases in this State as we go westward, and there is a line beyond which there is not sufficient quantity of rain falls to produce general farm crops. That line in Kansas, it is claimed, runs from Harper county, in the south, to Phillips county, in the north, carrying it sixty-six miles farther west in the north part of the State than it is in the south. The combined influences of the isothermals and rainfall, or moisture, it would seem, must affect the timber belts of this State, and therefore the position taken in the Agricultural Report, that these belts should or do run north and south, is probably incorrect—at least are so in theory. If the facts could be correctly ascertained, probably it would be found that the timber belts would cut this State at an angle of about 45 degrees. The Agricultural Report says that the native timber of the third belt is Cottonwood, Coffee Bean, Box Elder, Elms, Soft Maple and Willow, which is altogether too limited in kinds, for here in Rice county, Hackberry, Ash and Mulberry are found; and south of this, Black Walnut, and a species of Oak-leafed Mountain Ash; and north, the Oak and Walnut are found. The Black Walnut has also been found still farther west, but the Coffee Bean and Soft Maple have not been found growing wild in all this region. The Red Cedar grows in great abundance about 60 to 70 miles south of this point (Sterling), and large quantities of Cedar fence-posts have been brought from those Cedar groves. I learn that Black Walnut is found growing in Rush and Comanche counties, which are on the western boundary of the third timber belt. I am of the opinion that the timber-belt lines should run parallel with the Missouri river, where it forms the boundary line of our State; then taking the point where the Republican river enters the State, and from that draw a line to the point where the Neosho river leaves the State, and we will have a line running about parallel with the Missouri river, and all of the principal river courses of the eastern portion of the State, excepting the Kansas. The territory east of that line would form the first timber belt, and the timber found growing therein should be classified accordingly, for I think that the kinds found growing in any portion of it, would succeed in every portion. For the second belt, start from the point where the Arkansas river leaves the State, and run a line parallel to the last to the northern line of the State, and classify the kinds of timber found growing within its boundaries, as in the first. For the third belt, start from a point 100 miles west of the point where the Arkansas river leaves the State, and run a line parallel with the western line of the second belt to the northern line of the State, and likewise classify the timber found growing within its boundaries. For the fourth belt, include all of the State west of the said third belt, and say of it what is said in the Agricultural Report referred to, with the exception that in a few localities, only now and then a lonely Cottonwood can be seen along the water-courses. These belts would measure about an even width on a line running east and west through the State, and I think would be more in accord with the physical outlines and features of the State, the water-courses, isothermals, rainfalls, and the mountains.

For a list of varieties of native timber, growing in the third belt (in which I am settled), I would give the Cottonwood, Box Elder, Elm, Walnut, Ash, Hackberry, Mulberry and Red Cedar.

As to the beneficial results of timber belts upon vegetable growth, as a protection, I can only speak of my own farm. On my timber claim I planted a grove of Cottonwood trees in 1875, which is 9 rods wide and 60 long. The rows are 12 feet apart, and trees are 4 feet apart in the rows. On the north side of this grove there is a similar block of timber, which was planted two years later. The rows in this block were 12 feet apart, and between each of these rows was planted two rows of corn each year since the block was planted. The result has been a heavier growth of plant, and greater yield of grain than found on similar ground, not thus protected. Most of the people in this valley have planted shelters on the north sides of their land, which is an error, as protection is more needed against the hot summer winds, which affect growing vegetation. On my farm, I have arranged the shelters, or wind-breaks, on the south side, so as to counteract the hot south winds; and my fruit trees, small fruits, vines and shrubbery, and garden vegetables, show a very decided benefit from the protection thus arranged. The success of agricultural and horticultural pursuits in this valley depends very largely upon the results of the efforts being made in forest-tree culture. The subject of forestry, therefore, is one of great importance in connection with the interests of Kansas, and can hardly be over-estimated by the people settling in the western portions.

This valley, being traversed by the A. T. & S. F. Railway, which is destined to be one of the grand thoroughfares of this Nation, has the soil, climate and facilities for sustaining a vast agricultural population. The great lack is "timber," and if every farmer could but fully realize the advantages of timber belts and wind-breaks, properly arranged on the farms, and devote from 10 to 20 acres of his land to the different varieties of forest trees, which have been tested in his locality, and have succeeded, in less than one generation this country would not only be one of the most picturesque regions, but it would also have a supply of timber, at least equal to, if not in excess of, its wants, and which would be more evenly distributed over the face of the country, than is naturally found in some of the oldest settled timber countries.

FOREST-TREE SEEDS: THEIR MANAGEMENT.

BY PROF. E. GALE, MANHATTAN.

One of the first questions that forces itself upon the beginner in forest culture is, "How can I use successfully the material that nature places at my disposal?" Forestry, with the great mass of people who locate upon the plains, is a new occupation. We have seen the trees of the forest bloom and ripen their seeds, from childhood to manhood, without giving scarcely a thought to the special conditions essential to the completion of the round of reproduction. Seeds were simply seeds, affording us no interest, whether ripened in May or October. The botanist, even, seldom sees it a matter of moment to note the ripening-time of the seeds, and much less does it come within the range of his work to deal with the mode of treating the seeds for reproduction. Hence, when we come to a home where forest culture must take a prominent place, we find ourselves in the very elementary principles of forestry sadly wanting. We see all along our creeks and rivers, trees producing seeds, and we ask, Why may we not make these native seeds grow into forests? True economy dictates that we should use in our first essays at forestry that range of varieties which are found growing along our own creeks and rivers. When we go beyond this, let it be with caution, and more in the way of experiment than extensive planting.

The seeds of our forest trees in most cases require special treatment. No rule will apply to them all. Even the seeds belonging to the same genus sometimes require different treatment; and sometimes the same variety will succeed almost equally well when submitted to distinct modes of treatment. My object at this time is simply to submit only a few elementary facts, of practical application to the beginner in forestry. In doing this, I shall seek only to call attention to those species of trees that should first interest the planters on the plains. The beginners want nurse trees; for these we should look first to the rivers and creeks for our supply. In looking over the material from which our supply must come, we find some

SEEDS THAT MATURE IN THE EARLY SPRING.

These embrace the Elms (*Ulmus Americana, U. fulva, U. racemosa*), and we think, in the south part of the State, *U. alata*, the Willows (*Salix*), the Cottonwood (*Populus monelifera* and *P. angulata*), and the White and Red Maple (*Acer dasycarpum* and *Acer rubrum*); the latter, however, not a native of the State. These seeds are all mucilaginous in their composition, and require to be planted very soon after they mature. While they may be transported considerable distances, care must be taken that they do not become dry and brittle; or, on the other hand, become too warm by close or long confinement in large packages. The maple seed can be planted like corn, in drills, and will need no special treatment but to keep the ground clean of weeds. The seeds of the Elm, Willow and Cottonwood, being quite small, must be covered very slightly, and the surface of the soil must be kept constantly moist until they germinate. A partial shading and daily watering of the ground for a few days, in our climate, is often quite essential to insure success.

Next in the order of time is the

RED MULBERRY (*Morus rubia*).

This tree grows abundantly in our river and creek bottoms. The seed matures in early June. The berries should be carefully crushed, and the seed washed from the pulp. This seed can be planted immediately, or dried carefully in the shade and planted the following spring. The first course is the most desirable, as the seed, with proper treatment, is sure to germinate, and we gain one year in time. As the seed is small, the soil should be sifted upon it very lightly, and the seed-bed made so as to be partially shaded. As this tree has a very lengthy tap-root, the seedlings should be transplanted when one year old.

Next in order of ripening its seed is the

LINDEN OR BASSWOOD (*Tilia Americana*).

This tree, though not as valuable as many others, yet as a native of our State, it has some claims upon the notice of the tree planter. The seed matures with us in early August, and should be gathered from the tree as soon as it begins to turn yellow, and mingled carefully with moist sand and kept until the following spring, when it should be planted in the seed-bed very early. As the seed comes up almost immediately, the young plants will be in danger of suffering in our climate from late frosts.

We come now to the

SEEDS THAT MATURE IN AUTUMN.

These seeds we will divide into classes, having reference to the treatment which they should receive.

The first class embraces those seeds which should be either planted immediately or kept in moist sand or otherwise until spring, *i. e.*, the Hickories, including the Pecan (*Carya*); Chestnuts (*Castanea*); the Oaks (*Quercus*); the Maples that ripen in the fall, including the *Acer Negundo, A. saccharinum, A. nigrum;* all the Ash genus (*Fraxinus*), if we except *F. viridis* or Green Ash, the seed of which will germinate if kept dry until spring, but which may be treated like the others named; also the Persimmon (*Diospyros*). This class will also include the Butternut (*Juglans cinerea*), and the Black Walnut (*Juglans nigra*). Of this class, it is desirable to plant the seeds of the Hickories, the Oaks, the Butternut and Black Walnut where the trees are to grow, as they do not transplant well. If it is not convenient to plant the Hickories, the Oaks and Black Walnut in the fall, they can be spread thinly on the ground and covered with sod or light litter until early spring. The Chestnuts, the Ash genus and the Maples can be conveniently mingled with sand or thoroughly-decayed sawdust, very slightly moistened, and thus preserved until spring, either in the cellar or covered with earth in the garden, where they will be free from standing water.

The second class of fall-ripened seeds includes those which may be preserved in a dry condition until spring, and that then require only ordinary treatment for their growth. I name as worthy of trial here the Ailanthus (only on high dry ground), Catalpa, and Red-Bud (*Cercis*).

The third class includes the seeds which can be kept in a dry condition during the winter, but usually requiring some special treatment for successful germination, if so kept. Dogwood (*Cornus*) will not germinate for two or three years unless cleared from its pulp and put into moist earth in the fall. The Kentucky Coffee Tree seed and that of the Honey Locust require thorough scalding before planting in the spring. With this precaution, there is really very little difficulty in securing an early germination. The Red Cedar is the only evergreen that I shall name in this connection. The seed of this tree will seldom germinate until the second year. In our climate, some slight protection will be required for the first year in the seed-bed. In Kansas the Red Cedar makes a much more rapid growth than in the East, and for the sake of protection is no doubt worthy of cultivation.

IT SHOULD BE REMARKED

That this report has been prepared specially for Kansas planters, and for very good reasons does not include many of our old friends of the East; and as it is designed for practical use among the farmers of Kansas, it may even exclude some which a nurseryman would be inclined to test.

THE FORMATION OF GROVES AND WIND-BREAKS—A NEW DEPARTURE.

BY J. W. ROBSON, CHEEVER.

In giving our experience in raising forest trees on treeless plains, we intend to be very brief. Therefore,

1. *Location.*—For wind-breaks, two rods wide should be planted along the north and west lines, inside of the hedge. Box Elder, Ash and Elm are the only native trees which should be used.

The grove should be located directly north of the dwelling house, and should be extended to the extreme corner of the barn-yard, to afford protection to the stock, grain and hay-stacks. The width of the grove should at least be twenty rods. A grove of this density will break up the fiercest wind storm into spray. The first row of orchard trees should be fifteen rods from the last row of trees in the grove. And if the orchard be planted in blocks, viz., Cherry, Plum, Peach, Pear and Apple, the wind will not have an opportunity of massing itself till it has passed over the whole. We are decidedly in favor of a timber belt, two rods wide, on the south side of the orchard, this to be composed of Box Elder and Ash trees.

2. *Mode of Planting.*—It may sound paradoxical, but we don't plant —*we sow* the tree seeds, right on the ground, laid out for the wind-break and grove. This ground is prepared (late in the fall, after the winter wheat is sown) by stirring the soil very deep. Harrow the ground smooth while it is mellow and moist, which will put the soil in fine tilth for the reception of the seeds. Then take a common corn marker and make drills about two inches in depth. If the ground be new, marking one way will be sufficient;

but if the piece of land has been cultivated for many years, and is full of the seeds of noxious weeds, then mark off the ground the same as for corn.

The seeds which should be provided in season, are Walnut, Hackberry, Box Elder and Ash. If bees are a specialty, then Basswood (properly Linden), should be added. The first four can be found on any creek or river bottom, ripe and in good condition on the first day of October. In sowing the seeds, begin with Box Elder on the side next the house; plant from four to six seeds, every four feet; omit two rows, and plant the fourth. When enough has been planted, begin with Ash, then Hackberry, and lastly Walnut. The small seeds should be covered about an inch. The walnuts should be dropped in the furrow or drill, three feet apart, and trod down by the foot; don't cover any more. The empty rows between should be planted with Cottonwood cuttings, to act as nurses to the hard-wooded trees, and when thinned out are valuable for fuel and other purposes.

Some empty rows should be left for Elm, both Red and White. These trees ripen their seeds in the spring, generally about the first of May, and must be gathered from the trees before they fall. Trees favorably situated near still water may be permitted to drop their seed, which being very light, floats on the surface of the water, and can be scooped up in large quantities. The seed should be sown as soon as gathered, covered about half an inch; and if a fine, damp mulch is spread lightly over the ground, this will protect it from drying too rapidly. The advantages of the above mode of forming a grove are these: 1st, It is done at a season of the year when the farmer is not pressed with farm work; 2d, It is accomplished with less labor and risk than the old method of lifting and transplanting; 3d, By this mode the top-roots are left unbroken, which is of immense importance to the *tree* in the State of Kansas; and 4th, In four years the trees will have attained fully one-half more size and height than those trees transplanted at one or two years old.

3. *Culture, and After-Management.*—The seeds of those trees which ripen in autumn germinate in the spring at a very low temperature. Begin early in May to cultivate with a two-horse cultivator; by putting on the guards, it can be used from the start. If the plants are not all up, the hollow left by the marker will be sufficient guide. When the plants are six inches high, select the strongest in the cluster and pull out the rest, giving a thorough hoeing in the row; this being done in June, will be all the hoeing the rows will require. The cultivator will do all the cleaning the second year. *Cultivate carefully and often.* When the trees get too high, use the single-horse cultivator. The third year the trees will be so tall and spreading that the plantation will take care of itself. At the end of four years begin to thin out the Cottonwoods, and at the end of six years thin out every alternate tree in the hard-wooded rows. This will furnish an ample supply of fuel for a moderate-sized family.

4. *A list of Best Varieties of Native Trees.*—Red and White Elm, Box Elder,

Ash, Walnut and Hackberry. The Red Elm (*Ulmus fulva*) has not received the attention it merits from tree planters on our plains. It is peculiarly adapted to dry climates; succeeds in the most exposed situations on our prairies; grows rapidly; is free from disease and injury by insects; and when grown thickly in artificial groves, it runs up straight and tall.

The Hackberry (*Celtis occidentalis*) grows rapidly under culture. The first year, in the seed-row, its progress is slow; but if unmolested, its growth the second year is truly wonderful. The fruit is about the size of peas, ripens in October; should be sown, pulp and all, as soon as gathered.

If I had the money to spare, I would plant a section of land to Black Walnut, as the best investment that I could make for my children, using the other five trees mentioned in this paper as nurses. A walnut will grow, under culture, to saw-log size sooner than White Pine, and even now in our markets it is quoted at six times the price of pine. Six bushels of walnuts, with the shucks on, will plant three acres; plant early, and press firmly with the foot.

5. *Trees from Other States.*—We experimented largely eight years ago with trees not indigenous to Kansas, and are sorry to say that we signally failed; but there is not the least doubt that the conditions of success are more favorable *now* than they were then. The soil is more compact, there is more moisture, and more cloudy days; then there is an abundant protection afforded by our hedges, wind-breaks and groves. If our life is spared, we mean to experiment again, and believe we shall succeed.

In conclusion, we confess that we are very much disappointed in the Cottonwood (*Populus angulata*), as a standard, first-class timber tree for these treeless plains. True, the tree is symmetrical, and a rapid grower; its timber is useful on the farm; but it is so subject, on upland farms, to attacks of a borer, that many of our artificial groves are nearly destroyed. We have never seen a tree injured on the creeks or river bottoms. This is owing to the good services of the various species of woodpeckers which abound in such places, but rarely visit the uplands.

To develop a plan by which this most desirable result (timber culture on the treeless plains) may be popularized, is the aim of this short paper. We have endeavored to be concise, and yet at the same time cover the whole ground. Hundreds of enterprising farmers in western Kansas are planting trees by the million; millions more will be grown this spring. This argues a glorious future for the myriads of acres of rich but treeless tracts of land awaiting their reception. Here, then, is an object worthy the noblest ambition of our fellow-citizens. Then let us all *sow* and *plant* trees, and sacredly care for and cultivate all the rich treasures of our gracious Sylvia, until "our glorious commonwealth will seem to all men like the garden of the Lord."

FORESTRY.

HOW, WHERE AND WHAT TO PLANT ON THE PLAINS OF WESTERN KANSAS, ADJACENT TO THE 99TH MERIDIAN OF WEST LONGITUDE.

BY MARTIN ALLEN, HAYS CITY.

While in the East, forestry is already begun for profit, its chief projectors there admit they have much yet to learn. We in the West have to begin from necessity. Whole counties can be found immediately west of us where the natural timber would not supply their present population with firewood alone for a single year; and to our poverty in supply may be added our ignorance of the subject, for we have everything yet to learn, and no schools to go to for that learning. Forest trees are needed by us, not only for the wood and shade they furnish, but to stop the force of winds that come and go with such force at times as to render our homes and stock uncomfortable, our orchards and fruit unsafe, and our field crops liable to injury.

To obtain the best results in forestry, a good soil should be selected; and at the bottom of a northern slope, where it would catch the wash from adjacent lands, and be somewhat sheltered from the south winds and noonday suns, would be preferred. But as our soils are all tolerably good, and the natural surface of the country so level that slope or exposure makes but little difference, I would, on general principles, plant where the trees, after grown, would produce the most pleasing effect to the eye, or would be likely to do the most good in the way of shelter and protection to orchards, dwellings and stock-yards, and maybe growing crops also ought to be considered. Therefore, planting would be advisable, if not highly commendable, all around the farm, or on any side of it, or, if large, through the middle of it, excepting only immediately south of the dwelling, where a grove or orchard should not be admitted. For the comfort of its inmates, this side of the house should be left open to a free circulation of the atmosphere, during our hot days of summer.

If this plan is to be followed, and long single or double rows to be planted, the ground may be well prepared by first breaking, say in May, and replowing in a strip or strips, as the case may be, as soon as the sod is sufficiently well rotted, and before weeds have ripened their seeds thereon, this plowing to be repeated, say in the fall of the same year. By these two plowings, a dead-furrow can be created sufficiently deep to form the holes for the trees without digging; and by exposure to the frosts and snows of winter, all will be in excellent condition for spring planting. The only improvement to be made upon this preparation, would be to use a subsoil plow in the bottom of the open furrow. This mode, however, is applicable to a rapid and thorough preparation of long single or double rows, and when trees of same size are to be planted, after the trees are put in place, and well-pulverized soil only allowed to come in contact with their roots, the filling up and leveling of these furrows can be mostly done with a horse and plow. This is a cheap, rapid and highly efficient mode of planting, which is also applicable to planting fruit as well as forest trees.

For planting, very small trees, seeds, or an Osage or other hedge, the only modification of this plan would be to plow again as deep as possible before planting, reversing the order of the plowing, and turning the back-furrow into the dead-furrow, finishing with the harrow, or, for the finest work, with the garden-rake. This gives at once the finest, deepest and best pulverized seed-bed, free from weeds, and only needs to be kept so to insure success with either orchard, forest trees, or hedges.

Where this plan has been adopted, for a seed-bed, and a surplus of seedlings have been grown in this row, which should be the case, they can either be taken out and sold, or planted in one or more rows, on one or both sides of the original, which may have gone through the same process of preparation one year later. These rows should be twelve feet apart, so as to admit a team and plow, to go between them, to turn under any crops of weeds that appear before the trees are sufficiently large to shade the ground. Two rows of corn, peas or potatoes can be grown between each two rows of trees, two or three of the first years after planting. If a considerable breadth is to be planted, it will be well to give one year more to the preparation of the ground. After breaking in May, and cross-plowing early in the fall, sow in winter wheat; after this crop is harvested, the ground should be plowed before weeds get a foothold, and let me caution all not to put millet on ground intended for trees. While it is a valuable forage plant, it becomes also a troublesome weed, very difficult to eradicate. The ground should again be plowed, this time deeply, late in the fall or winter, and well harrowed, or smoothed with a clod-crusher, after which, in early spring, mark off in rows as for corn, three by four feet preferred; plant two rows with corn and one with trees. For easy and rapid work, trees twelve to eighteen inches in height would be a convenient size. Take a few of these trees in a pail, with their roots either immersed in water or a puddle of clay and water, well mixed, to the consistency of thick cream, and with a sharp, bright spade, at each of the places indicated by the marking for a tree, make an opening and plant one, being careful to allow no clods to come in contact with its roots, and also to get it to its proper depth, with roots spread out naturally, and firmly fastened by pressure. When planting on newly-plowed land, allow for the ground to settle from one-half to two inches. The above plan leaves the trees standing 3x12 feet, the corn 3x4 feet, and the whole may be as well cultivated as a corn-field. The first two years cultivate both ways; then, if the trees are of free-growing sorts, potatoes or peas may be substituted for the corn on the third year, and then only cultivate one way. By the fourth year one-half the trees are to be cut out, leaving a stand of 6x12 feet, when the cross-cultivation may be revived with good effect, in eradicating any weeds that may have secured a lodgment in the rows. After this an annual light plowing, to cover the weeds that may grow, just before ripening their seeds, and mowing the weeds in the small strips in the rows where the plow cannot reach, will be sufficient until the ground becomes completely shaded, then mulch with straw, coarse manure, or other rubbish, and this will complete the culture.

The further culture will consist in most diligently keeping out fires. Proper thinning will need to be done, if saw-logs are the object, which, at the end of fifteen years, would leave the trees twenty-four feet apart each way.

Suppose the course here pointed out to be followed with an acre of cottonwood, the crops grown between the rows the first few years, and the seven-eighths of the trees cut out in thinning, would pay abundantly for all trouble and expense, including cultivation and care, that the seventy-five remaining trees have received. Six hundred feet of lumber, worth $6, and a cord and a half of wood, worth $3 more, uncut, would be a moderate estimate to the tree, or $675 per acre. But suppose one-half be deducted, to cover all possible accidents, emergencies and contingencies of every nature, then what is there that shows better profits?—or, if the grove be to the east or west or north of the farm buildings, may it not be worth even more, in comfort to both man and beast, than in dollars and cents to the purse of the owner?

If slower growers than the Cottonwood, producing more valuable timber, be selected for planting the grove, the cultivation might have to be continued two or three years longer before the ground would be shaded; and less persistent thinning at first would answer; maturity would also be somewhat delayed; yet the continual use for shelter and the ultimate crop of timber would be equally, if not even more valuable.

Various modifications of this plan would be admissible, to suit the wants and convenience of the planter, such as planting peach seeds at the points for the second thinning. If the cultivation be generous, they may give some fruit before it will be necessary to cut them out, and when this is done they will furnish much superior fire-wood, and when dry the limbs make the best of kindling wood.

If the plantation be of rapid-growing and quick-maturing sorts, I would look with favor upon the plan of interspersing in each alternate row, Bur Oak, Black Walnut and Wild Cherry: they would be likely to get started, so as to make a second crop of stately trees much quicker than could be done from a second planting after the first regular crop had been cut off. Sprouts making a rapid growth might be expected from many sorts cut down, but they would now be secondary in size and importance, to those that had until this cutting always been subservient to them.

I am well aware that very many intelligent men recommend planting much closer than here suggested, grow no remunerative crops among their young trees, and must necessarily fail for want of room to give the proper cultivation which is so very essential to keep down weeds, which, if allowed to grow, harbor mice and rabbits, that often do great injury to small trees, and exposes the whole to destruction by fire. Clean culture is not only the best safeguard against difficulties, but the surest road to a rapid and profitable growth of young trees. It never seemed to me consistent to recommend thirty or forty feet apart, for our fruit trees, and 2x4, or at most 4x4 feet for our forest trees, as some have done. This last distance is the one contemplated by Congress in the "timber-culture act."

Those who want to plant, and at the same time comply with that law, and secure reasonable success in the growth of their trees, should plant and cultivate on the long-row plan, as first herein detailed, and thin out as fast as the terms of the law will allow. Four rows all around a quarter-section, twelve feet apart, would cover the necessary ten acres, and sixteen inches apart in the row would make the necessary number of trees, which may be thinned to three feet in the row, by time of making final proof.

With good culture, however, I doubt not that a more persistent thinning would be better; that half the number of trees at first planting will be found more satisfactory in their rapid growth and the ultimate product of timber, more especially when the free-growing sorts are planted.

The Cottonwood is our most available tree upon the plains, and seedlings often spring up on newly-broken sod, and along the sand-banks of our streams. These at one year old make excellent stock for grove planting. It also grows readily from cuttings, made ten inches to a foot long, and planted nearly their whole length in the ground designed for forest rows, or more thickly in nursery form, where they are to remain one year only, and then should be planted in forest rows.

The Willow family is largely represented with us, and some of the large-growing sorts are well worthy of cultivation. It may be grown from cuttings the same as the Cottonwood, but do not use the chance seedlings found growing on the sand-bars, as very many of them would turn out to be small, and feeble growers, unworthy of our care or culture.

The Box Elder seeds should be gathered about the time of first frosts in autumn, and planted between that time and early spring, thickly in rows, in a good, well-prepared seed-bed. The yearling plants make nice stock for forest planting.

The Green Ash may be treated the same as the Box Elder. It furnishes our best native wood. It is rather slow while young, and is sometimes hindered by a large green worm, known as the tobacco worm, eating the foliage.

The Elms, white and red, ripen their seeds the latter part of May. They should be gathered and sown thickly at once, without covering, in a well-prepared seed-bed, partly shaded and watered for several days, until they start. The former makes one of our best shade trees, when planted singly, as shade trees should be; and the latter is a fair grower, furnishing very good small timber, to say nothing of its bark, as an emollient medicine.

The Hackberry seeds are quite different from the Ash or Box Elder, but may be treated practically the same way. The young trees are slow growers the first year or two, and are troubled with rabbits, even in the summer time. It ultimately makes a fair grower, and is a good fire-wood.

The Mulberry seed I have no experience with, but if a single tree can be obtained, it may be propagated and extended by layering. It is a small tree of the most valuable wood, and its fruit is by no means to be despised.

The Kentucky Coffee Tree is said to furnish excellent timber. Its seeds may be planted in the fall, and as it forms an immense tap-root, I judge it would be best to plant where it is to remain. One thing to commend it, is its beautiful, doubly pinnate foliage.

The Black Walnut should be gathered soon after it drops from the tree, and if spread out thinly on soft ground, slightly covered and kept moist, it will sprout and be ready for planting in the spring, where it is to remain. It does not transplant well, but is one of our best large-growing trees, and one of the most desirable to intersperse with other sorts for a second crop of timber.

The Bur-Oak acorns may be gathered soon after they fall from the tree, and kept in the cellar, mixed with moderately dry saw-dust, earth or sand. In early spring they will be sprouted and ready to plant, either in forest or seed-bed, for future transplanting.

The above, I think, include all our strictly native sorts, worthy of culture, except the Red Cedar, our only native evergreen. It is not so easily grown from seed or transplanted as most of the above. Its culture, therefore, belongs more strictly to the nurseryman. It ought to be grown largely for ornamental hedges and screens from the wind, about our dwellings. For this purpose it has no equal anywhere in this latitude, here or eastward. The great value of its wood is well known.

Of the trees growing near us on the east may be mentioned the Honey Locust. Its seed may be gathered almost any time during fall or winter, and soaked in warm water in the spring, before planting. It is a tree worthy of quite extensive cultivation, both for ornament and use.

The Sycamore seeds I have no experience with; but it, like the Mulberry, can be readily extended by layering. I think it is not very valuable, but worthy of moderate trial, and may be useful in an ornamental way.

The Soft, or Silver Maple, extends in its native habits into the valley of the Blue river, in our State. The seeds ripen about the same time as the Elms, and may be treated practically the same way, but should have more room, more covering, and will do with less shade and water. In cloudy, moist weather, they will do well without either. As a rapid grower, it is well worthy of trial. Like the Mulberry and Sycamore, it can be quite readily increased by layering.

The Native Buckeye, or Horse Chestnut, extends some further west than the Maple, and is worthy of trial in a small way for ornament. Some of its sorts, especially the dwarfs, are very beautiful. Seeds should be planted soon after ripening, in early fall, at a moderate depth, and partially covered with earth, and the covering finished with leaves or other rubbish, to be partly removed in the early spring. It does not transplant well.

Of trees not native of our State, I will name first the Osage Orange, an excellent hedge plant; succeeds well here; its timber is of the very best, and, while of rather slow growth, should not be neglected as a forest tree. Do not plant among corn, or other trees: it does not endure shade, which is a great benefit to many sorts. As the plants are already an article of commerce, I need not give the mode of growing it from seed, which is not so easy as with most other sorts.

The Cypress, a Southern tree that endures the Northern winters, should be tried here. I have no experience in growing it from seed.

The Catalpa, a native of the lower Ohio valley and southward, promises well here. The wood is soft, but very durable for posts or railroad ties, and such-like purposes. The seed should be planted about the time of planting corn, in well-prepared soil, and will make a growth that season of from one to three feet, when properly cultivated.

The Virginia Wild Cherry should also be tried. The seeds may be planted in the fall, or, if obtained late and dry, they may be soaked moderately and subjected to freezing, mixed with earth or sand, until time of planting, in spring.

Of strictly foreign trees, the Ailanthus, a Chinese tree, promises as well as any, so far as tried. It may be grown readily from seed, or from root cuttings made in the fall or winter, kept in sand or earth in the cellar, and planted in the spring. It should, however, be confined to the central part of a grove, where it could not find its way out, as it is a terrible wanderer. Do not plant it where sprouts are not wanted.

The Sugar Maple, Beech, White and Golden Willows, Larches, Firs and Spruces, in fact, most of the best sorts of the North and East, are practically unworthy of further trial here at present.

In a brief paper like this, upon a subject that has called forth volumes from able writers (unadapted in many respects to our locality), very many things are necessarily omitted, and none treated at the length deserved; yet I hope these few and hasty suggestions may prove of at least some value to planters on the "treeless plains." Let every one to whom these presents shall come, do his duty in redeeming our respective localities from the epithet of "treeless."

FORESTRY IN THE ARKANSAS VALLEY.

BY C. H. LONGSTRETH,

(Former Forester of the Atchison, Topeka & Santa Fé Railroad.)

G. C. Brackett, *Sec'y—Dear Sir:* In reply to your request for a synopsis of our work in the growing of forest trees in the Arkansas Valley, I will say that, having been engaged for the past seven years in the growing and testing of different kinds of forest trees in this valley, I find the following list to be hardy, reliable, and such as I would recommend for general planting: Honey Locust, Green Ash, Box Elder, Black Walnut, Cottonwood, Kentucky Coffee Tree,* Hackberry, Mulberry, and the Elms. My experience thus far justifies me in saying that these trees are all hardy and easily grown here, when intelligently planted and properly taken care of. The Honey Locust and Ash adapt themselves almost equally well to all kinds of soil and locations. We have them growing from the lowest to the highest lands. They make a little more rapid growth on the bottom lands, but aside from this do equally well upon the uplands. Black Walnut succeeds wherever we have planted it; makes the most rapid growth upon sandy loams. I would not recommend planting the Walnut in a location where the subsoil is too hard and dry. It will grow in such soil, but not as rapidly as when planted where the tap-root can easily penetrate the subsoil. Box Elder does best upon sandy loams, where not too high. Would not recommend planting it upon lands too high and dry, as it would be very short-lived in such locations. Upon our bottom lands, where well drained, and upon all sloping lands, it grows rapidly. Cottonwood will grow almost anywhere, in all kinds of soil and locations, but does best on the sandy soils along the river bottoms. Kentucky Coffee Tree, and the Hackberry, are of rather slow growth while young, but after three or four years from planting they grow faster, doing the best upon our heaviest soil; will not do well where it is very sandy. Both grow well upon uplands in this valley, where not too sandy or the subsoil not too tough and tenacious. The Mulberry and the Elms do best upon bottom lands, but upon uplands, where the soil is a sandy loam and has a porous subsoil, they do almost equally as well as in the bottoms.

The list of trees that I recommend for general planting here will succeed in almost any soil or location found in the Arkansas Valley, the main point being to start the trees right in the beginning. It is essentially necessary that the soil should be deeply plowed and well pulverized before planting. If to be upon prairie sod, it is better to cultivate the land in some crop for a year or two before planting trees of *any* kind. It will only be a waste of time to plant, unless the ground is thoroughly prepared first.

As a general rule, the best and cheapest mode of growing forest trees for timber, is by means of seed. Some kinds, such as the Cottonwood, the Willows and most of the Poplars, may be readily propagated from cuttings. I usually plant the seeds in nursery-rows, thinning out at one year old, and transplanting to the forest. Never transplant after one year old. The nut-bearing trees do not easily transplant, and the seed should be planted where the trees are to remain. We have practiced planting in rows four, six, eight, and twelve feet apart, with trees two to three feet apart in the rows, the results so far being in favor of rows four feet apart. Trees that naturally grow upright may be farther apart than those of a spreading habit.

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*Commonly known as "Coffee Bean."

To be successful in the growing of trees, it is essentially necessary that they should receive good thorough culture. Cultivate well in the early part of the season, and allow no weeds or grass to grow. Stop all cultivation with the plow after the middle or last of July—this being done in order to let the trees have time to ripen their wood and be in good condition for the winter. After three or four years, or as soon as the trees shade the ground, they will need no more cultivation, and will thereafter need but little care. Be careful to keep stock from running among the trees, as they are very injurious, even after the trees attain a large size.

Where a forest has been planted closely (as it should be), there will be but little need of pruning. In fact, I have quit pruning entirely. I find that nature will do her own pruning much better than I can. As the trees advance in years, they may be thinned out from time to time, taking care to always leave the straightest and thriftiest.

In conclusion: I find it no more trouble to raise a crop of trees than a crop of corn, as a few well-directed efforts in the beginning will insure to any one a nice grove of trees in a few years' time. I wish I had the time to go on with this subject in all its details, and describe more fully all methods of work. But time will not permit. Besides, very few people seem to appreciate this subject as they should. I have talked and done all that I could to get men to plant trees in this country, but so far there has been but little done. There have been many claims located here under the Government timber law, but usually the object in doing so seems to be only to obtain a patent or title to the land, the claimants seeming to care but little whether there is any timber growing on their farms. One thing is certain: forest plantations must be grown here if the country ever succeeds in agricultural matters. I am satisfied that it is only a question of time when forests will be growing all over this land. It may take generations to do it, but it will be done.

HUTCHINSON, KAS., January 29, 1880.

BY C. C. CHEVALIER, GARFIELD, PAWNEE COUNTY.

The attempts to grow forest trees in this, the Arkansas Valley, must be considered largely experimental. One of the main troubles, arising from the anxiety of our people to see trees successfully growing at as early a period as possible, has been the improper preparation of the ground selected for such purposes — even in their haste planting upon the newly-turned sod of the prairie. From experience and observation, I am convinced that satisfactory results can only be reached by a thorough and deep stirring of the land, which should be followed for two or three years before it is planted to trees. By deep stirring, I mean from twelve to fifteen inches. Such plowing as is generally given for a crop of grain is not sufficient, and it will be a waste of money and labor to plant forest trees on such prepared ground.

VARIETIES TO PLANT.— The best results have been with such as are indigenous to this country, as the Cottonwood, Box Elder, and White Ash. Of such as have been introduced, the Ailanthus, Honey Locust, Kentucky Coffee Tree, Mulberry, Osage Orange, Black Walnut and White Willow succeed very well, both on upland and bottom land.

HOW TO PLANT.—The seeds and cuttings were planted in rows six to eight feet apart and two to four feet in the rows, and allowed to grow up to trees where they were planted. Cuttings can be made at any time after the leaves have fallen. It is however better to wait until spring and cut them about the time the buds begin to swell. The ground should be ready, and they should be planted immediately following a rain. If cut during the winter, it must be done when the wood is not frozen, and they should be buried at once in damp earth, and care taken that they do not dry out before planted. Seeds of the Honey Locust, Kentucky Coffee Tree and Black Walnut should be planted as soon as gathered in the fall, unless there is danger of their drying; in such conditions they should be packed in earth and kept moist until planting time in the spring. Dried Osage Orange seed must be soaked in water from eight to ten days before planted, changing the water every day. If convenient, place them in a sack and sink it in a running stream of water, until sprouted, then plant immediately.

CULTURE.— The culture, after planting, should be similar to that given corn, to keep the ground clear of weeds, and loose. Culture should be kept up each year, until the trees are sufficiently grown to afford shade to the land.

I have gladly given to the readers of this volume these conclusions, reached by years of experience, to save them from the many mistakes made by those of us who first settled in this country, and from which we suffered serious losses.

BY J. W. BYRAM, CEDAR POINT, CHASE COUNTY.

Many, if not all, the writers on this subject appear to lose sight of the adaptability of different kinds of forest trees to different kinds of soil. The State of Kansas is over 200 miles wide by 400 miles long, embracing almost all the varieties of soil known to analysis; and while it is a known fact that certain kinds of trees *naturally* seek a certain kind of soil, we still find these same varieties recommended for planting indiscriminately all over the State. We all know that such trees as Walnut, Black and Green Ash, Hackberry, Bur Oak, and Sugar Maple naturally seek a rich bottom soil, of a moist character, and usually a sandy subsoil; while the White Oak, Black Oak, Poplar and a few other varieties prefer a clay upland soil, with stiff clay or hard-pan for a subsoil. Others, such as Hickory, Beech, Chestnut and Gray Ash seem to choose a table land, with a rich top soil and hard clay subsoil. Others still appear to accommodate themselves to the kind of soil in which the seed may chance to fall, and appear to adapt themselves to a high or low location, rich or poor soil, hard-pan, sand or gravel subsoil, with an indifference which should make them favorites with those who are planting artificial groves. Among these may be mentioned Cottonwood, Box Elder, White and Red Elm, Honey Locust, and Coffee Bean. The last-named three are very valuable as timber, and the first three worthy of mention for their fast-growing qualities, in rapidly producing fuel. The Walnut has also shown a capability of adapting itself to a soil differing from its natural choice to a large extent, but under these circumstances the growth is slow, and it is questionable whether the planter would not be wise in selecting some of the above-named varieties in its stead. I would not be understood as confining the Walnut, nor several of the first-named varieties, to the low lands and bottoms of Kansas, as their natural soil, as some of our wide-spreading prairies present in a measure the same quality of soil, and on such land these varieties will thrive; but would point out the fact that a large amount of upland in this State does *not* possess these qualifications, and settlers on such land should thoroughly understand this, and avoid making a mistake in the beginning, as the error is hard to overcome when once made.

Kansas is yet in its infancy, and forestry is a subject that as yet has had but little practical development. The congeniality and peculiar habits of forest trees on our naked plains are as much undetermined as the subject of horticulture was ten or fifteen years ago. The mistakes of some of the early-planted orchards are probably not much greater than those of some of the early-planted groves will prove to have been some years hence. In this connection, I would mention that some varieties that appear to do well in one part of our State, fail to some extent in another, on apparently the same soil and location. I have had occasion to compare Soft Maple groves in Douglas and Jefferson counties with similar groves of equal age and fully as much care in Chase and Marion counties, and the difference in favor of the former is surprising, being fully one-half. The casual observer would claim that the land in each locality was exactly similar, but a close examination shows a marked difference in the subsoil; that in the first instance being either a sandy subsoil or a yielding clay, while in the latter case it is a stiff hard-pan, similar to black wax, and known in the West by the name of "gumbo," being of the same texture as the "wax lands" of Texas. Thus it becomes imperatively necessary that the planter should understand, not only the nature of the soil, but also of the subsoil of the land to be planted in forest trees, and select his varieties accordingly.

I would also caution the tree planters of the State against the mistake of largely planting varieties as yet untried in this climate. The fact that a tree grows well and thrives in a climate far to the south or north of this, or does well in the timbered lands of the States east, is no guaranty or assurance that it would do well in Kansas. It is very commendable in every tree planter to obtain and give fair trial to any and all kinds of trees that may come within his reach, both native and foreign; but in composing the main body of the groves for timber and useful purposes, none but such as promise to be a success should be planted.

The Government, with a desire to promote the culture of artificial groves, has offered large inducements in granting lands for this purpose, and those who have availed themselves of this offer should endeavor to make a wise use of the gift, and as far as possible contribute to the general welfare of the State. In an examination of a large number of groves in the western counties, I am led to believe that they have suffered more from a lack of thorough cultivation during the first three or four years following their setting than from all other causes combined. To obtain the best results from an artificial grove, no matter what kind of trees may be used in planting, the cultivation for the first three years should be fully as good as for a crop of corn, after which time the cultivation may be gradually diminished, and finally discontinued altogether.

BY B. P. HANAN, LANGDON, RENO COUNTY.

The western and southwestern parts of Kansas have been settled but a few years, and much of the southwestern part is yet unsettled. Therefore, the experience of even the first settlers is limited to about five or ten years of time.

C. H. Longstreth, late forester for the Atchison, Topeka & Santa Fé Railroad Company, has given his experience with trees at several stations from Hutchinson westward, in Vol. VIII, Kansas Horticultural Report, as have A. S. Dimock and L. Houk, also; therefore, I shall refer more especially to the region south and west of Hutchinson.

A large portion of this region consists of high, dry prairie land — much of it quite sandy, and some with but little sand, but mostly rich in the elements of vegetable growth. The great difficulty to contend with is the lack of rains, and the dry, hot winds, which prevail for a few days almost every year. Theory would suggest that the trees that are best adapted by nature to the above-named conditions will be the most likely to succeed. Experience, and observation of the few trees, in their natural state, found along some of the streams in Reno, Kingman, Pratt, Barbour, Comanche, and the counties to the west, show that the Cottonwood, White Ash, Black Walnut, Hackberry, Kentucky Coffee Tree, Mulberry, Box Elder, White Elm, China Tree, and Red Cedar, all possess these qualities in an eminent degree.

The Cottonwood and Box Elder seem to succeed the best on the greater variety of soils. The Cottonwood is the fastest grower of all our native trees, and was more extensively planted by the first settlers than any other tree, for two reasons, namely: to get timber soon, and because it can be easily transplanted. Millions of the young seedlings can be had from the sandy shores of the Medicine and other streams, or the trees can be easily grown from cuttings. Since the "authorities" have discovered that the Cottonwood is a *tree*, it will continue to be the first tree planted on timber-culture claims. With proper culture, a person can grow all needed fuel from Cottonwoods within three years from the planting of the cuttings. But, as Cottonwood is less valuable as a timber than some of the other trees named above, I would advise to only plant just enough Cottonwood for use until Green and White Ash, Box Elder, and Black Walnut can be grown large enough for use, which trees I prefer in the order named. The Red Cedar grows as fast and as well here as the Walnut. But most people fail in transplanting, because they do not understand how to do it. Catalpa and Mulberry are promising.

BY WM. M'CRACKEN, SEDGWICK COUNTY.

Fully realizing the importance of a successful system of forest-tree culture in this valley, and recognizing the great value of the experiences of the past years, which have determined to some extent the successes and failures of varieties used and methods tried, and desiring to assist the settlers of this section who from necessity must give this matter their attention, I will give my experience, as far as I have tried, in relation to the cultivation of forest trees.

VARIETIES SUCCESSFUL.—Black Locust, Honey Locust, Elms, Soft Maple, Silver-Leaf Maple, Cottonwood, Box Elder, Sycamore, White and Black Walnut, White Willow, Catalpa, White Ash, Cedars, and American Weeping Willow.

VARIETIES FAILING.—Mountain Ash, European Larch, Lombardy Poplar, Chestnuts, all our Oaks and Hickories, Red Mulberry; Wahoo, slow grower; Dogwood, slow grower. The Pines are generally a failure, unless they are well shaded.

LOCATION.—I see very little difference in the growth of the trees.

PREPARATION OF THE SOIL, AND PLANTING.—I plow the ground thoroughly, mark out and plant shallow, tramp the soil solid around the roots, let them stand till growth starts, and then throw a furrow up to the trees on each side, and that will hold moisture during the whole season. The second year, about the last of May, I again throw up furrows on each side; they will hold moisture the whole season, no matter how dry it is. The third year they are treated in the same manner, and need no more attention. When trees are planted shallow and banked up on both sides, they make double the growth they will on level ground, and drouth will not affect them. There is a prejudice against the Black Locust, which I consider is a mistake. It is valuable for timber, and the growth is nearly equal to that of the Cottonwood. In planting Locust seed, I throw boiling water on them, and plant immediately.

THE NATIVE FLORA OF KANSAS.

REPORTED BY COUNTIES.

The county reports given herewith were made in response to the following circular:

SECRETARY'S OFFICE, KANSAS STATE HORTICULTURAL SOCIETY,
LAWRENCE, KAS., Jan. 10, 1880.

DEAR SIR: This Society desires to make up a list of all the different kinds of native forest trees, including the fruit-bearing classes—also, of the shrubs and vines, including climbing vines—found growing wild in your county, and will fully appreciate your assistance in the work.

LISTS.

1st. Native forest trees growing on uplands.
2d. Native shrubs growing on uplands.
3d. Native forest trees growing on bottom or low lands.
4th. Native shrubs growing on bottom or low lands.
5th. Native fruit-bearing trees growing on uplands.
6th. Native fruit-bearing trees growing on bottom or low lands.
7th. Native nut-bearing trees and shrubs growing on uplands.
8th. Native nut-bearing trees and shrubs growing on bottom or low lands.
9th. Native fruit-bearing vines upon upland or low lands.
10th. Native vines and climbers found in your forests, or on the prairies.

SMALL FRUITS.

11th. Are the following classes found growing wild in your county? Strawberry, Blackberry, Gooseberry, Currant, Raspberry. Give character of soil, and location upon which they are found.

12th. Do you find more than one native variety of the following classes? If so, please furnish a description: Strawberry, Blackberry, Gooseberry, Currant, Raspberry, Grapes (summer and frost).

13th. Do you find any native fruit-bearing trees, shrubs, vines, or plants, which you deem valuable for cultivation? If so, please give a description, with their points of merit.

Please make the lists as complete as practicable.

Very respectfully, G. C. BRACKETT, *Secretary.*

ALLEN COUNTY.—BY H. E. VAN DEMAN, GENEVA, AND C. C. KELSEY, HUMBOLDT.

Forest trees growing on upland: Bur, black, chinquapin, and red Oaks; Shrubs—Scrub Oak, Sumach, Wax Plant and Coral. On bottom or low land: Gray and black Ash, Box Elder, Cottonwood, white and red Elm, Hackberry, shellbark and pig-nut Hickory, Kentucky Coffee Tree,* Honey Locust, Linden, Red Cedar, soft Maple, bur, water, white and red Oak, Red Bud, Sycamore, and Willow; Shrubs—Dogwood, Button Bush, and Indian Strawberry.

Fruit-bearing trees growing on upland: Black and red Haw, Mulberry, and Chickasaw Plum. On bottom or low land: Cherry, black and red Haw, Mulberry, Pawpaw, Persimmon, Plum, and Sloe.

Nut-bearing trees and shrubs growing on upland: Black Walnut. On bottom or low land: Hickory, Pecan, and Black Walnut; Shrubs—Hazel.

Fruit-bearing vines growing on upland or low land: Summer and frost Grape. Vines and climbers growing in forests or on the prairies: Bitter Sweet, Poison Ivy, Woodbine, and Rose.

Small fruits found in this county: Strawberry, Blackberry, Gooseberry, Black Currant, and Raspberry—only one variety of each known. Strawberries are found in the prairie grass near sloughs; Blackberries near sloughs and on the skirts of forests. Gooseberries along the rocky cliffs near river bottoms; Raspberries beside old, neglected fences, and near the timber. Worthy of cultivation: A variety of Persimmon, and Plum.

ATCHISON COUNTY—BY THOS. F. COOK, MONROVIA.

Forest trees growing on upland: Ash, red Elm, Hackberry, shellbark and pig-nut Hickory, bur and red Oak, and Walnut; Shrubs—Red Bud. On bottom or low land: Cottonwood, soft Maple, and Willow; Shrubs—Buckthorn.

Native fruit-bearing trees growing on upland: Crab Apple and Mulberry. On bottom or low lands: Crab Apple.

Nut-bearing trees and shrubs growing on upland: Hazel, Hickory, and Walnut. On bottom or low land: Walnut.

Fruit-bearing vines on upland or low land: Grape. Vines and climbers found in forests or on the prairies: Grape, Rose, and Sarsaparilla.

Small fruits: Strawberry, Blackberry, Gooseberry, and Raspberry. The Blackberry is found on bluffs near streams; Gooseberry near streams; Strawberry on high and low prairie. Of the small fruits, there is found only one variety of each of the classes, excepting the Blackberry, of which there are two. Grapes, both summer and frost varieties, are found. There is a variety of Blackberry found growing wild that is worthy of cultivation; plant hardy and productive, and fruit excellent.

BOURBON COUNTY.—BY J. D. MANLOVE, FORT SCOTT.

Forest trees growing on upland: White Ash, black, black-jack, post, red and white Oak, Red Bud, and Red Cedar; Shrubs—Elder. On bottom or low land: Red and white Ash, Basswood, Box Elder, sweet Buckeye, Cottonwood, Hackberry, white and thick shellbark Hickory, Honey Locust, white and black Maple, bur Oak, Sycamore, Black Walnut, and yellow Willow; Shrubs—Dogwood, and Elder.

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*COMMONLY known as "Coffee Bean."

Native fruit-bearing trees growing on upland: Cherry, Persimmon, and Plum; Shrubs—Black Haw. On bottom or low land: Mulberry, Persimmon, Plum, and Sloe.

Nut-bearing trees and shrubs growing on upland: Pecan, Black Walnut, and Hickory. The same are found on bottom or low land.

Fruit-bearing vines on upland or low land: Summer and frost Grapes. Vines and climbers found in forests or on the prairies: Poison Ivy.

Small fruits: Gooseberry; Blackberry, three kinds. Of the other classes only one of a kind is found. The Persimmon, Pecan, and a low-growing blackberry (supposed to be Dewberry), are worthy of cultivation.

BROWN COUNTY.—By P. W. Fuller, Hiawatha.

Forest trees growing on bottom or low land: Ash, Box Elder, Cottonwood, red and white Elm, Hickory, Honey Locust, Sycamore, Black Walnut, and Willow.

Fruit-bearing trees growing on bottom or low land: Crab Apple, Cherry, Pawpaw, and Plum.

Nut-bearing trees and shrubs on bottom or low land: Hazel, Hickory, and Black Walnut.

Fruit-bearing vines upon low land: Grape. Vines and climbers found in forests or on the prairies: Bitter Sweet, Grape, and Hop.

Small fruits: Strawberry, Blackberry, Gooseberry, and Raspberry. Most of these are found growing on rich, black soil in timber near streams. There are some very fine varieties of wild Plums worthy of cultivation.

BUTLER COUNTY.—By Wm. H. Litson, Benton.

Forest trees growing on upland: Kentucky Coffee Tree, and white Elm; Shrubs—Dwarf Ash, and Sumach. On bottom or low land: Ash (in variety), Buckeye, Box Elder, Kentucky Coffee Tree, red and white Elm, Hickory, Honey Locust, Oak (in variety), and Walnut; Shrubs—Dwarf Ash, Elder, Red Bud, and Wahoo.

Fruit-bearing trees growing on bottom or low land: Mulberry, and Chickasaw and Sand Plum.

Nut-bearing trees and shrubs growing on bottom or low land: Pig-nut Hickory, Pecan, and Walnut.

Fruit-bearing vines growing on upland or low land: Grape (in variety). Vines and climbers found in forests or on the prairies: Bitter Sweet, Poison Ivy, and Woodbine.

Small fruits: Blackberry, Gooseberry, and Raspberry. One variety of each is found, and on the banks of streams, and rich bottom lands. Grapes, three varieties; first ripens in August; second, later; third, in winter. All small Blackberries worthy of cultivation. Raspberry, a large Black-cap variety; as fine as any now in cultivation.

CHAUTAUQUA COUNTY.—By A. Ellis, Elk City.

Forest trees growing on upland: Black-jack and post Oak; Shrubs—Ground Oak, a shrub bearing an abundance of acorns. On bottom or low land: Ash, Cottonwood, white and red Elm, Hickory, white Maple, bur Oak, Pride of China,* Red Bud, Sycamore, Black Walnut, and Willow.

Fruit-bearing shrubs growing on upland: Serviceberry. On bottom or low land: Black Haw, Mulberry, Pawpaw, Persimmon, and Plum.

Nut-bearing trees growing on upland: Hickory. On bottom or low land: Hickory, Pecan, and Walnut.

Fruit-bearing vines growing on upland or low land: Grape, summer and frost varieties. Vines and climbers found in forests or on the prairies: Poison Ivy, and Sarsaparilla.

Small fruits: Strawberry, Blackberry, Gooseberry, and Raspberry. Only one variety of each is found, excepting of the Blackberry, and of that the upright and Dewberry.

CLAY COUNTY.—By E. S. Beegle, Clay Center.

Forest trees growing on upland: Only the Red Cedar, scattered along the rocky bluffs of small creeks and the Republican river. On bottom or low land: White Ash, Box Elder, Cottonwood, Kentucky Coffee Tree, white and red Elm, Hackberry, pig-nut Hickory, Honey Locust, white Maple, red Oak, Black Walnut, and Willow.

Fruit-bearing trees growing on bottom or low land: Mulberry, and Plum.

Nut-bearing trees growing on bottom or low land: Pig-nut Hickory, and Black Walnut.

Fruit-bearing vines growing on upland or low land: Grapes. Vines and climbers found in forests or on the prairies: Bitter Sweet, and Poison Ivy.

Small fruits: Gooseberry, and Raspberry. The first are found growing on sandy loam, along the creeks; the second, on black, sandy loam, on the margins of bluffs.

CLOUD COUNTY.—By C. H. Sheffield, Glasco.

Forest trees growing on bottom or low land: Ash, Box Elder, Cottonwood, and Elm.

Fruit-bearing trees growing on low land: Crab Apple, Mulberry, and Plum.

Nut-bearing trees growing on bottom or low land: Walnut.

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*Bears a beautiful gold-colored fruit, in clusters, similar to Haws. Hangs on through winter, becoming translucent.

Fruit-bearing vines growing on upland or low land: Grapes, three varieties.

Small fruits: Gooseberry, Currant, and Raspberry. Are found on rich soil, along timbered streams. There are three varieties of Grapes: A large summer, covered with bloom; a beautiful white, with a musky flavor, and the common frost. The second is worthy of cultivation.

COFFEY COUNTY.—BY C. H. GRAHAM, LEROY.

Forest trees growing on upland: Ash, Box Elder, Cottonwood, Elm, Hackberry, Hickory, Maple, Oak, and Sycamore. On bottom or low land: Ash, Box Elder, Cottonwood, Elm, Hackberry, Hickory, Honey Locust, Linden, Maple, Oak, Sycamore, Walnut, and Willow; Shrubs—Red Bud, Wahoo.

Fruit-bearing trees growing on upland: Mulberry, Persimmon, and Plum; Shrubs—Elder. On bottom or low land: Mulberry, Pawpaw, Persimmon, and Plum; Shrubs—Elder.

Nut-bearing trees and shrubs growing on bottom or low land: Hickory, Pecan, Walnut, and Hazel.

Fruit-bearing vines on upland or low lands: Grape, summer and frost varieties. Vines and climbers found in forests or on the prairies: Bitter Sweet, and Ivy. The Hop succeeds under cultivation in this county.

Small fruits: Strawberry, Blackberry, Gooseberry, and Raspberry. Are found generally on rich bottom land joining timber.

COWLEY COUNTY.—BY J. VAN DOREN, WINFIELD.

Forest trees growing on bottom or low land: White Ash, Box Elder, Cottonwood, white and red Elm, Coffee Tree, Hackberry, Hickory, Honey Locust, white Maple, black, bur and white Oak, Red Bud, Sycamore, and Walnut.

Fruit-bearing trees growing on bottom or low land: Mulberry, and Plums in variety.

Nut-bearing trees on upland: Black Walnut. On bottom or low land: Black Walnut, and Hickory.

Fruit-bearing vines growing on upland or low land: Grape. Vines and climbers found in forests or on the prairies: Variety of Clematis, and Hop.

Small fruits: Strawberry, Blackberry, Gooseberry, black Currant, and Raspberry. The Blackberry is found on rocky points, near streams, and the Raspberry in timber skirting water-courses. Worthy of cultivation: A variety of Plum.

CRAWFORD COUNTY.—BY THOMAS PING, GIRARD.

Forest trees growing on bottom or low land: Cottonwood, Elm, Hackberry, Hickory, white, post and red Oak, Sycamore, and Black Walnut.

Nut-bearing trees growing on bottom or low land: Hickory, and Black Walnut.

Fruit-bearing vines growing on upland or lowland: Grape, winter variety.

Small fruits: Strawberry, Blackberry, Gooseberry and Raspberry are found growing only on dry, rich soil.

DAVIS COUNTY.—BY WM. CUTTER, JUNCTION CITY.

Forest trees growing on upland: Ash, Buckeye, Choke Cherry, Coffee Tree, Cottonwood, red and white Elm, Hackberry, pig-nut Hickory, Honey Locust, bur Oak, Chestnut, Red Bud, Sycamore, Black Walnut, Willow, and Red Cedar. All the foregoing are found on bottom or low land.

Fruit-bearing trees growing on upland: Crab Apple, Mulberry, Pawpaw, and Plum.

Fruit-bearing vines on upland or low land: Grape, two varieties. Vines and climbers found in forests or on the prairies: Bitter Sweet, Poison Ivy, and Virginian Creeper.

Small fruits: Strawberry, Blackberry, Gooseberry and Raspberry are found most plenty on rich limestone soil, upon hillsides. Worthy of cultivation: Raspberry, and Plums.

DICKINSON COUNTY.—BY J. W. ROBSON, CHEEVER.

Forest trees growing on upland: Green Ash, Box Elder, Coffee Tree, Cottonwood, red and white Elm, Hackberry, Honey Locust, Black Walnut, and Willow; Shrubs—Wahoo, or Burning Bush, Dogwood, Elder, and Red Bud. On bottom or low land: Green Ash, Box Elder, Buttonwood, Cottonwood, red Cedar, Coffee Tree, red and white Elm, Hackberry, pig-nut Hickory, Honey Locust, Linden, red and bur Oak, Black Walnut, and Willow; Shrubs—Button Bush, Burning Bush, Dogwood, Elder, Red Bud, and Sumach.

Fruit-bearing trees growing on upland: Plum. On bottom or low lands: Mulberry, Plum, and Pawpaw.

Nut-bearing trees growing on bottom or low lands: Black Walnut.

Fruit-bearing vines growing on upland or low land: Grapes. Vines and climbers found in forests or on the prairies: Moon Seed, Staff Tree, and Virginian Creeper.

Small fruits: Strawberry (west of Abilene); Gooseberry and Raspberry are found on light sandy loam, on the first bench above the creek level; the Raspberry more frequently on the second bench. Of the Strawberry and Gooseberry, but one variety; Blackberry, the Dewberry is found; Raspberry, several varieties. Grapes are abundant along the rivers and creeks.

DONIPHAN COUNTY.—BY S. HATCH, WATHENA.

Forest trees growing on upland: Red Elm, shellbark and pig-nut Hickory, Linden, Honey Locust, red, pin, bur and white Oak, and Black Walnut; Shrubs—Red Bud, and Spireas. On bottom or low land: White Ash, Cottonwood, red and white Elm, Hackberry, shellbark Hickory, Linden, Honey Locust, white and hard Maple, bur Oak, Sycamore, Black Walnut, and Willow.

Fruit-bearing trees growing on upland: Crab Apple, Cherry, red Haw, Mulberry, and Plum. On bottom or low land: Cherry, Mulberry, and Pawpaw.

Nut-bearing trees and shrubs growing on upland: Shellbark and pig-nut Hickory, Hazel, and Black Walnut. On bottom or low land: Shellbark Hickory, and Black Walnut.

Fruit-bearing vines on upland or low land: Grape. Vines and climbers found in forests or on the prairies: Bitter Sweet, Hop, Ivy, Morning Glory, Rose, Sarsaparilla, and Virginia Creeper.

Small fruits: Strawberries are found on uplands; Blackberries, Gooseberries and Raspberries in all kinds of locations and soils. Worthy of cultivation: Varieties of Plum; fruit large, and highly esteemed.

DOUGLAS COUNTY.—By Geo. Y. Johnson, Lawrence.

Forest trees growing on upland: Box Elder, Cottonwood, red Elm, Hackberry, shellbark and pig-nut Hickory, Honey Locust, and Walnut; Shrubs—Alder, Button Bush, Red Bud, and Sumach. On bottom or low land: Ash, Box Elder, Buckeye, Cottonwood, red and white Elm, Hackberry, shellbark and pig-nut Hickory, Kentucky Coffee Tree, Linden (Basswood), Honey Locust, white Maple, red, white, black-jack, chinquapin and bur Oak, Sycamore, Black Walnut, and Willow; Shrubs—Prickly Ash, Alder, Buck Bush, Devil's Blood, Elder, Hawthorn, swamp Locust, Purple Cluster Berry, Sumach, and Wahoo.

Fruit-bearing trees growing on upland: Crab Apple, Cherry, red Haw, Mulberry, and Plum. On bottom or low land: Crab Apple, Cherry, Mulberry, Pawpaw, and Plum.

Nut-bearing trees and shrubs growing on upland: Hickory, Hazel, and Black Walnut. The same are found on bottom or low land.

Fruit-bearing vines growing on upland or low land: Summer and frost Grape. Vines and climbers found in the forests or on the prairies: Bitter Sweet, Brier, Cucumber, Hop, Ivy, Rose, Sarsaparilla, and Woodbine.

Small fruits: Strawberry, Blackberry and Raspberry are found on the prairies and low lands, and the Gooseberry on bottom land, skirting the water-courses. Of Blackberry, the Dewberry and common upright are found.

ELK COUNTY.—By Henry Welty, Elk Falls.

Forest trees growing on upland: Black-jack and post Oak. On bottom or low land: White Ash, Box Elder, Buckeye, Cottonwood, Coffee Tree, red and white Elm, Hackberry, Hickory, bur, swamp and Spanish Oak, Red Bud, Sycamore, and Black Walnut; Shrubs—Prickly Ash.

Fruit-bearing trees growing on upland: Plum. On bottom or low land: Black Haw, Persimmon, Pawpaw, and Plum.

Nut-bearing trees growing on bottom or low land: Hickory, Pecan, and Black Walnut.

Fruit-bearing vines growing on upland or lowland: Summer and frost Grape. Vines and climbers found in forests or on the prairies: Bitter Sweet, and Sarsaparilla.

Small fruits: Strawberry, Blackberry, Gooseberry and Raspberry are found growing on all kinds of soil and locations. Of Strawberries, there are two kinds—one resembles the Wilson's Albany in shape and flavor, the other pear form and sweet flavor. Blackberry* and Raspberry, two kinds each. Grapes, summer and frost varieties.

ELLIS COUNTY.—BY MARTIN ALLEN, HAYS CITY.

Forest trees growing on upland: None are found on the general upland, on account of the fires which for a long time have annually swept over them, but at the heads of some of the cañons, and on the driest and most forbidding spots, not reached by fires, the red Cedar, red Elm and Hackberry seem to flourish; also the shrubs, black Currant, red and white Indian Currant, Roses, and Sumach. On bottom or low land: Green Ash, Box Elder, Cottonwood, Coffee Tree, red and white Elm, Hackberry, Black Walnut, and Willow; Shrubs—Dogwood, Elder, and white Thorn.

Fruit-bearing trees growing on upland: The Dwarf or Rocky Mountain Cherry, (which has been sold by tree peddlers throughout the Western States under the name of "UTAH HYBRID,") and Mulberry. On bottom or low land: Choke Cherry, Mulberry, and Dwarf Virginia Sand Plum.

Nut-bearing trees growing on bottom or low land: Black Walnut.

Fruit-bearing vines growing on upland or low land: Grapes. Vines and climbers found in forests or on the prairies: Bitter Sweet, Greenbrier, and Poison Ivy.

Small fruits: Gooseberry, Currant, and Raspberry. The Gooseberry is found on bottom land, Currant generally on exposed bluffs, Raspberry on the steepest northern slopes. Of Gooseberries there are two varieties; Currants, black, white and red Indian varieties; Raspberries, the common blackcap. Worthy of cultivation: Varieties of Plums.

NOTE.—Bur Oak grows in Russell county, only one-half mile from the line of this county.

ELLSWORTH COUNTY.—BY W. E. FOSNOT, ELLSWORTH.

Forest trees growing on bottom or low land: Ash, Box Elder, Cottonwood, Coffee Tree, Elm (in variety), Hackberry, Oak, Walnut, and Willow.

Fruit-bearing trees growing on bottom or low land: Mulberry, and Plum.

Nut-bearing trees growing on bottom or low land: Walnut.

***THE Dewberry, and common upright.**

Fruit-bearing vines growing on upland or low land: Grapes.

Small fruits: Gooseberry, black Currant, and black Raspberry.

FORD COUNTY.—BY JAMES NICOLL, SPEAREVILLE.

Forest trees growing on bottom or low land: Ash, Cottonwood, Coffee Tree, Elm, Hackberry, Black Walnut, and Willow; Shrubs—Sumach.

Fruit-bearing trees growing on upland: Sand Plum, found on the sand-hills along the south side of the Arkansas river. On bottom or low land: Plum, Choke Cherry, Elderberry, black and white Currant.

Nut-bearing trees and shrubs growing on bottom or low land: Hazel, and Black Walnut.

Fruit-bearing vines growing on upland or low land: Grapes, summer variety. Vines and climbers found in the forests or on the prairies: Poison Ivy.

Small fruits: Currant, on all classes of soil and location.

FRANKLIN COUNTY.—BY H. P. WELSH, OTTAWA.

Forest trees growing on upland: Cottonwood, Elm, Honey Locust, Maple, Oak, and Black Walnut. On bottom or low land: Ash, Cottonwood, Elm, Hackberry, Hickory, Maple, bur and red Oak, Red Bud, and Walnut.

Fruit-bearing trees growing on upland or low land: Cherry, Mulberry, and Plum.

Nut-bearing trees growing on upland: Hickory, Pecan, and Walnut. On bottom or low land: Hickory, Pecan, and Walnut; Shrubs—Hazel.

Fruit-bearing vines growing on upland or low land: Grapes. Vines and climbers found in forests or on the prairies: Poison Ivy.

Small fruits: Strawberry, Blackberry, Gooseberry and Raspberry are found growing on black loam.

GRAHAM COUNTY.—BY R. A. RICHMOND, STAR.

Forest trees growing on bottom or low land: Ash, Box Elder, Cottonwood, and Elm.

Fruit-bearing trees growing on bottom or low land; Cherry, and Plum.

Fruit-bearing vines on upland or low land: Grape.

Small fruits: Gooseberry and Currant are found on the low lands along streams.

This county is almost wholly upland prairie; therefore very little of timber, shrubs and vines is found.

GREENWOOD COUNTY.—BY ISAAC DETHERIDGE, FAME.

Forest trees growing on upland: Black-jack Oak; Shrubs—Sumach (in places.) On bottom or low land: Ash, Box Elder, Cottonwood, Coffee Tree, red Cedar, red and white Elm, Hackberry, shellbark and pig-nut Hickory, honey and black Locust, white, post and pin Oak, Red Bud, Sycamore, and Black Walnut; Shrubs—Buckeye and Sumach.

Fruit-bearing trees growing on bottom or lowland: Black Haw, Mulberry, Pawpaw, Persimmon, and Plum.

Nut-bearing trees growing on bottom or lowland: Hickory, Pecan, and Walnut.

Fruit-bearing vines growing on upland or low land: Grapes. Vines and climbers found in forests or on the prairies: Greenbrier, Ivy, and Woodbine.

Small fruits: Strawberry, Blackberry, Gooseberry and Raspberry are found on a variety of soils; Blackberry often on stony bluffs, along streams and sloughs; Raspberries on open places in the timber; Gooseberries and Strawberries on dry bottom land. Varieties: Blackberry, two kinds—one resembles the Dewberry; Raspberries—red and black; Grapes—summer and frost.

HARVEY COUNTY.—By MYRON HALL, NEWTON.

Forest trees growing on upland: White Ash, Box Elder, Cottonwood, Dogwood, white and red Elm, Hackberry, Hickory, Honey Locust, white and black Oak, Black Walnut. On bottom or low land: White Ash, Box Elder, Cottonwood, white and black Oak, Sycamore, and Willow.

Fruit-bearing trees on upland: Mulberry and Sand Plum. On bottom or low land: White Elder.

Nut-bearing trees growing on bottom or low land: Shellbark and pig-nut Hickory, Oak, and Black Walnut.

Fruit-bearing vines on upland or low land: Grapes, early and late.

Small fruits: Black Currant and Gooseberry grow in abundance along the streams on dry soil. Worthy of cultivation: Six kinds of Sand Plum, which have been selected for their quality. They are much larger than the Green Gage; some are of a dark red, some are light green—very large, and good flavor.

JACKSON COUNTY.—By W. D. BARNETT, HOLTON, AND J. W. WILLIAMS, COPE.

Forest trees growing on upland: Ironwood, chinquapin, black, white, red and black-jack Oaks, red Cedar (evergreen), and Black Walnut; Shrubs—Buck brush, Dogwood, Prickly Ash, Sumach, Wahoo, Willow, and Yellow-wood. On bottom or low land: Ash, Box Elder, Buckeye, Coffee Tree, Cottonwood, red and white Elm, Hackberry, white and shellbark Hickory, Linden, Honey Locust, white Maple, bur, red, black and pin Oaks, Sycamore, Black Walnut, and Willow; Shrubs—Alder, Choke Cherry, swamp Dogwood, Snowball tree, Snowdrop, and Wahoo.

Fruit-bearing trees growing on upland: Crab Apple, Mulberry, and Plum. On bottom or low land: Crab Apple, black Cherry, Choke Cherry, Elder, red Haw, Mulberry, and Pawpaw. All of the above are found on upland, except Pawpaw.

Nut-bearing trees and shrubs growing on upland: White and shellbark Hickory, Hazel, and Black Walnut. On bottom or low land: Black Walnut.

Fruit-bearing vines on upland or low land: Grapes, summer and frost. Vines and climbers found in forests or on the prairies: Bitter Sweet, Hop, Poison Ivy, Sarsaparilla, and Virginian Creeper.

Small fruits: Strawberry, upright and trailing Blackberry, Gooseberry and Raspberry are found on nearly all soils and locations.

JEFFERSON COUNTY.—By J. N. Hall, Oskaloosa.

Forest trees growing on upland: Gray Ash, red and white Elm, shellbark and pig-nut Hickory, Honey Locust, white, bur, black, red and chinquapin Oak, and Black Walnut; Shrubs—Crab Apple, black Haw, Elder, Red Bud, and Sumach. On bottom or lowland: Gray Ash, Box Elder, Buckeye, Cottonwood, red and white Elm, Hackberry, shellbark and pignut Hickory, Honey Locust, White Maple, and bur, red and chinquapin Oak; Shrubs—Red Bud.

Fruit-bearing trees growing on upland: Crab Apple, black Haw, Mulberry, and Plum. On bottom or lowland: Mulberry, Pawpaw, and Plum; Shrubs—Elderberry.

Nut-bearing trees and shrubs growing on upland: Hickory, Hazel, and Walnut. On bottom or lowland: Hickory, and Walnut.

Fruit-bearing vines growing on upland or lowland: Grapes, summer and frost varieties. Vines and climbers found in forests or on the prairie: Bitter Sweet, Ivy, Greenbrier, and Rose.

Small fruits: Strawberry, Blackberry, Gooseberry, and Raspberry. Strawberry is found on the prairie; Blackberry and Raspberry in the timber and fence corners; Gooseberry in the timber and on good soil.

JEWELL COUNTY.—By J. S. Foster, Jewell City.

Forest trees growing on upland: Ash, Box Elder, Cottonwood, Hickory, Oak, and Walnut. On bottom or lowland: Box Elder, Cottonwood, Elm, Oak, and Walnut.

Fruit-bearing trees growing on upland: Choke Cherry and Plum.

Nut-bearing trees growing on bottom or lowland: Walnut.

Fruit-bearing vines growing on upland or lowland: Grapes.

Small fruits: Gooseberry, Currant and Raspberry are found on bottom land; worthy of cultivation—Raspberry.

JOHNSON COUNTY.—By Wm. Maxwell, Edgerton.

Forest trees growing on upland: Ash, Hickory (in variety), Oaks (in variety), and Black Walnut; Shrubs—Prickly Ash, red and gray Dogwood, and Red Bud. On bottom or low land: Black Ash, Box Elder, Buckeye, Cottonwood, Kentucky Coffee Tree, red and white Elm, Hackberry, Ironwood, Linden, Honey Locust, white Maple, white, bur and black jack Oak, Sycamore, Black Walnut, and Willow; Shrubs—Prickly Ash, Buttonwood, Bladder-nut, red and gray Dogwood, and Red Bud.

Fruit-bearing trees growing on upland: Crab Apple, Black Cherry, Mulberry, and Persimmon. On bottom or low land: Crab Apple, black and red Haw, Pawpaw, and Persimmon.

Nut-bearing trees and shrubs growing on upland; Hazel, Hickory, and Black Walnut.

Fruit-bearing vines on upland or low land: Grapes, summer and frost varieties, and a very large fall variety. Vines and climbers found in forests or on the prairies: Bitter Sweet, Clematis, Greenbrier, Ivy, Rose, and Sarsaparilla.

Small fruits: Strawberry found on the prairies, Blackberry, Gooseberry, and Raspberry, on either rich upland or bottom. Species worthy of cultivation: The Pawpaw, if a successful method of transplanting could be found, would be valuable. The Persimmon is a beautiful tree, and the fruit very desirable, especially the seedless variety found in this county. The native Blackberry and Raspberry are hardier than the cultivated class, and their fruit is valuable.

KINGMAN COUNTY.—By L. W. Leach, Kingman.

Of forest trees, there are none in this county growing on uplands. On bottom or low land, there are a few trees of the Cottonwood, Elm, and Willow, growing along the streams.

Fruit-bearing trees growing on bottom or low lands: Sand Plum, which, on account of its freedom from attacks of the curculio, is worthy of cultivation.

LABETTE COUNTY.—By J. L. Williams, Oswego.

Forest trees growing on upland: White Ash, Buttonwood, Cottonwood, red and white Elm, Hickory, Honey Locust, black-jack, post, red and bur Oak; Shrubs—Dogwood, Elder, and Hawthorn. On bottom or low land: White Ash, Box Elder, Buttonwood, Blue Gum, Kentucky Coffee Tree, Cottonwood, red and white Elm, Hackberry, Hickory, Honey Locust, red and white Maple, black jack, post, red, and bur Oak, Sourwood, Black Walnut, and Willow; Shrubs—Dogwood, Elder, Red Bud, Snowdrop, and Wahoo.

Fruit-bearing trees and shrubs growing on upland or low land: Black and red Haw, Persimmon, and Plum.

Nut-bearing trees growing on upland, bottom or low land: Hickory, Pecan, and Walnut.

Fruit-bearing vines on upland or low land: Grapes, frost. Vines and climbers found in forests or on the prairies: Greenbrier, Hop, Poison Ivy, white and red Rose, Trumpet Vine.

Small fruits: Strawberry, Blackberry, Gooseberry and Raspberry are found growing on most any kind of soil and location not exposed to fires. There are several varieties of each.

LEAVENWORTH COUNTY.—BY E. J. HOLMAN, LEAVENWORTH.

Forest trees growing on upland: White and black Ash, Box Elder, Cottonwood, white and red Elm, Hackberry, shellbark and pig-nut Hickory, Red Bud, Honey Locust, white and sugar Maple, red, black-jack and white Oak, Sycamore, and white Willow; Shrubs—Buckbrush, Roses, and Sumach. On bottom or lowland: White and black Ash, Box Elder, Coffee Tree, Cottonwood, red and white Elm, Hackberry, shellbark and pig-nut Hickory, Honey Locust, white and sugar Maple, red, white, black-jack and black Oak, Red Bud, Sycamore, and Walnut.

Fruit-bearing trees and shrubs growing on upland: Crab Apple, Cherry, Mulberry, Pawpaw, Plum, and Serviceberry.

Nut-bearing trees and shrubs growing on upland: Hickory, Walnut, and Hazel. On bottom or lowland: Hickory, Pecan, Walnut, and Hazel.

Fruit-bearing vines growing on upland or lowland: Grape. Vines and climbers found in forests or on the prairies: Rose.

Small fruits: Strawberry, Blackberry, Gooseberry and Raspberry are found on loose, sandy soil on upland.

LINCOLN COUNTY—BY J. P. HARMAN, VESPER.

Forest trees growing on upland: A very few Cottonwood; Shrubs—Alder. On bottom or low land, along the streams only: Ash, Box Elder, Cottonwood, Elm, Hackberry, Maple, Oak, and Walnut.

Fruit-bearing trees growing on bottom or low land: Mulberry, and Plum.

Nut-bearing trees growing on bottom or low land: Walnut.

Fruit-bearing vines growing on upland or low land: Grapes.

Small fruits: Strawberry, Gooseberry, Currant and Raspberry are found; the first, on loamy soil, in sheltered localities; the second, on sandy soil; the third, on sandy loam; the fourth, on rocky cliffs—all in shaded places; but one of each class is found. Fruits worthy of cultivation: The Mulberry.

LINN COUNTY.—BY J. W. LATIMER, PLEASANTON.

Forest trees growing on upland: Cottonwood, red and white Elm, shellbark Hickory, post and chestnut Oak, and red Cedar; Shrubs—Buckberry, Elder, and Sumach. On bottom or low land: White Ash, Box Elder, Buckeye, Cottonwood, white Elm, Hackberry, shellbark and white Hickory, Kentucky Coffee Tree, Linden, Honey Locust, white and hard Maple, red and bur Oak, Sycamore, Black Walnut, Willow, and Wahoo.

Fruit-bearing trees growing on upland: Black Cherry, black Haw, and Serviceberry. On bottom or low land: Crab Apple, red, white and black Haw, Pawpaw, Persimmon, and Plum.

Nut-bearing trees growing on upland: Hickory, two varieties. On bottom or low land: Hickory, three varieties, Pecan, Black Walnut; Shrubs —Hazel.

Fruit-bearing vines: Grape, summer and frost. Vines and climbers found in forests or on the prairies: Bitter Sweet, Poison Ivy, Rose, and Virginian Creeper.

Small fruits: Strawberries are found on the prairie, but most numerous on rich, sandy bottom land; Blackberries and Raspberries on ridges and in fence corners, and Gooseberries on the bottoms along streams. Of the Strawberry, there are several varieties; of the Blackberry, the Dewberry; and of common Raspberry, the Blackcap, and a purple-fruited variety supposed to be a chance seedling of the Purple Cane. Worthy of cultivation: Dwarf Serviceberry, and Dewberry.

LYON COUNTY.—BY ROBERT MILLIKEN, EMPORIA.

Forest trees growing on upland: There are none except, occasionally, a black-jack Oak pushes out on to the bluffs near streams. On bottom or low land: Green Ash, Linden, Box Elder, Buckeye, Cottonwood, Coffee Tree, red and white Elm, Hackberry, shellbark and white Hickory, Honey Locust, white Maple, bur and red Oak, Red Bud, Sycamore, Black Walnut, and Black Willow; Shrubs—Prickly Ash, Buttonbush, Dogwood, red Osier, Elder, chinquapin Oak, Sumach, Snowberry, Wahoo, and black Willow.

Fruit-bearing trees growing on bottom or low land: Crab Apple, Choke Cherry, black Cherry, Mulberry, Pawpaw, and Plum.

Nut-bearing trees growing on upland or low land: Hickory and Walnut.

Fruit-bearing vines on upland or low land: Grape (*cordifolia riparia*). Vines and climbers found in forests or on the prairies: Bind Weed, Cucumber, Dodder, Greenbrier, Staff Tree, or Bitter Sweet, Sarsaparilla, and Virginian Creeper.

Small fruits: Strawberry, Blackberry, Gooseberry, and Raspberry. The first is found scattered over the bottom prairies, or in timber openings; the others on bottoms, in sheltered places, in or near the timber. Have not found but one variety of each class. Grapes, summer and frost varieties, are found.

MARSHALL COUNTY.—JOHN MCKEE, MARYSVILLE.

Forest trees growing on upland: Box Elder, Cottonwood, Locust, White Maple, and Walnut. On bottom or low land: White Ash, Box Elder, Buckeye, Cottonwood, white and red Elm, Hickory, Sycamore, Walnut, and Willow; Shrubs—Red Bud.

Fruit-bearing trees growing on bottom or low land: Choke Cherry, and Plum.

Nut-bearing trees growing on upland: Walnut. On bottom or low land: Hickory, Walnut, and Hazel.

Fruit-bearing vines growing on upland or lowland: Summer and frost Grape. Vines and climbers found in forests or on the prairies: Bitter Sweet, Cucumber, Ivy, and Hop.

Small fruits: Strawberry, Blackberry, Gooseberry, and Raspberry are found, and appear to thrive the best on soil a little sandy. There are more than one kind of Strawberry and Gooseberry. Some of the Plums are worthy of cultivation.

M'PHERSON COUNTY—BY THEO. BOGGS, MCPHERSON.

Forest trees growing on upland: Ash, Box Elder, Cottonwood, Elm, and white Oak; Shrubs—Alder, and Sumach. On bottom or low land: Ash, Box Elder, Cottonwood, Coffee Tree, Elm, Hackberry, Honey Locust, Oak, Red Bud, Sycamore, and Willow; Shrubs—Alder, and Sumach.

Fruit-bearing trees on upland and low land: Plum.

Fruit-bearing vines on upland or low land: Summer and frost Grape.

Small fruits: Gooseberry and Currant are found on bottom lands. Worthy of cultivation: Plum is much improved by culture.

MIAMI COUNTY.—BY L. BISHOP, OSAWATOMIE.

Forest trees growing on upland: Kentucky Coffee Tree, red and white Elm, shellbark and pig-nut Hickory, Honey Locust, hard Maple, black-jack, post and pin Oak; Shrubs—Buckbrush, Dogwood, Elder, Ironwood, Red Bud, and red and white Sumach. On bottom or lowland: White Ash, Box Elder, Kentucky Coffee Tree, red and white Elm, Hackberry, shellbark and pig-nut Hickory, Linden, Honey Locust, hard and white Maple, bur, black-jack, post and water Oak, Sycamore, Black Walnut; Shrubs—Buckeye, Buckbrush, Dogwood, Elder, Red Bud, Sumach, Wahoo, and Willow.

Fruit-bearing trees and shrubs growing on upland: Cherry, black and red Haw, Persimmon, and Plum. On bottom or low land: Crab Apple, Cherry, black and red Haw, Pawpaw, and Plum; Shrubs—Serviceberry.

Nut-bearing trees growing on upland: Shellbark Hickory. On bottom or lowland: Shellbark Hickory, Pecan, and Black Walnut.

Fruit-bearing vines growing on upland or low land: Grape. Vines and climbers found in forests or on the prairies: Bitter Sweet, Greenbrier, Poison Ivy, Sarsaparilla, and Virginian Creeper.

Small fruits: Strawberry is found mostly on rich soil, along the skirts of ravines; Blackberry in the timber; Gooseberry and Raspberry on rich soil, in open places in timber. Only one variety of each is found of each, excepting the Strawberry, of which there appear to be two. Worthy of cultivation: A large-sized Strawberry of unequaled flavor; Persimmon surpassing in size and quality any yet seen.

MITCHELL COUNTY—BY E. A. TAYLOR, BELOIT.

Forest trees growing on bottom or low land: Ash, Box Elder, Coffee Tree, Cottonwood, red and white Elm, Hackberry, white Oak, Black Walnut, and Willow; Shrubs—Alder, Red Bud, Sage Brush, and Sumach.

Fruit-bearing trees on bottom or low land: Mulberry, and Plum.

Nut-bearing trees on bottom or low land: Black Walnut.

Fruit-bearing vines on uplands or low land: Summer and frost Grapes. Vines and climbers found in forests or on the prairies: Bitter Sweet, Grape, Morning Glory, Poison Ivy, Rose, Sensitive Rose, and Woodbine.

Small fruits: Gooseberry, Currant and Raspberry are found on all exposures protected from fires, and classes of soil. Worthy of cultivation: Varieties of Plums.

MONTGOMERY COUNTY.—BY L. A. WALKER, INDEPENDENCE.

Forest trees growing on upland: Oaks are occasionally found. On bottom or low land: Ash, Box Elder, Coffee Tree, Cottonwood, water and red Elm, Hackberry, Hickory, black and honey Locust, white Maple, black and white Oak, Sassafras, Sycamore, Black Walnut, and Willow; Shrubs—Thorn Tree.

Fruit-bearing trees on bottom or low land: Elderberry, black Haw, Mulberry, Pawpaw, Persimmon, and Plum.

Nut-bearing trees on bottom or low land: Hickory, Pecan, and Black Walnut.

Fruit-bearing vines on upland or low land: Grapes. Vines and climbers found in forests or on the prairies: Bitter Sweet, Hop, Honeysuckle, Moon Seed, Poison Ivy, and Woodbine.

Small fruits: Strawberry, Blackberry, and Raspberry are found on river and creek bottom lands and on openings in the timber. Only one variety of each class has been discovered.

MORRIS COUNTY.—BY F. B. HARRIS, WHITE CITY.

Forest trees growing on upland: There are none. But where the fires are kept out, on the margin of bottom lands, nearly all the native varieties are springing up, such as white Ash, Box Elder, Hickory, and Walnut; Shrubs—Elder, and Sumach. On bottom or low land (named in the order of their comparative number): White and red Elm, Black Walnut, white Hickory, bur Oak, Sycamore, Cottonwood, Hackberry, Ash, Box Elder, and Mulberry. On some bluffs the Red Cedar is found. Shrubs—Buckeye, Dogwood, Elder, and Sumach.

Fruit-bearing trees and shrubs on upland: Mulberry, Pawpaw, and Plum. On bottom or low land: Mulberry.

Nut-bearing trees on bottom or low land: Hickory, bur Oak, and Black Walnut.

Fruit-bearing vines on upland or low land: Summer and frost Grapes.

Vines and climbers found in forests or on the prairies: Bitter Sweet, Greenbrier, Hop, and Woodbine.

Small fruits: Blackberries, Gooseberries and Raspberries are found on black bottom loam, in heavy-timbered places. But one variety of each class has been discovered. Worthy of cultivation: A variety of Plum and Raspberry.

NEMAHA COUNTY—BY S. J. EDGERLY, SENECA.

Forest trees growing on upland: Cottonwood, Elm, Hickory, Linden, Honey Locust, soft Maple, red, bur and white Oak, Walnut. These are all found on bottom or low land.

Fruit-bearing trees on upland and low land: Crab Apple, Cherry, and Plum.

Nut-bearing trees on upland: Hickory and Walnut.

Fruit-bearing vines on upland: Grape.

Small fruits: Strawberry is found on the prairie; Blackberry, Gooseberry and Raspberry on loamy soil, in timber skirting the streams.

NEOSHO COUNTY.—BY GEO. W. ASHBY, CHANUTE.

Forest trees growing on upland: Hickory, and bur, black-jack, post and red Oak; Shrubs—Buckbrush, Buffalo, Willow, and Sumach. On bottom or lowland: Gray Ash, Box Elder, Cottonwood, Coffee Tree, white and red Elm, Hackberry, shellbark and pig-nut Hickory, Linden, Honey Locust, soft Maple, bur and red Oak, Sycamore, Black Walnut, and Willow; Shrubs—Indian Arrow, Buffalo Willow, Red Bud, and Sumach.

Fruit-bearing trees on upland: Crab Apple, black Cherry, black and red Haw, Persimmon, and Plum; Shrubs—Serviceberry. On bottom or low land: Crab Apple, Cherry, Pawpaw, Persimmon, and Plum; Shrubs—Elderberry.

Nut-bearing trees growing on upland: Hickory. On bottom or lowland: Hickory, Pecan, and Black Walnut; Shrubs—Hazel.

Fruit-bearing vines growing on upland or lowland: Frost Grape. Vines and climbers found in forests or on the prairies: Bitter Sweet, Sarsaparilla, Virginian Creeper, and Woodbine.

Small fruits: Strawberry is found on the prairie, on all kinds of soil and location; Blackberry, Gooseberry, and Raspberry on rich, alluvial soils in valleys and in timber.

NESS COUNTY.—BY N. W. SHAW, NEVADA.

Forest trees growing on upland: All classes are found on the skirts of streams—Ash, Cottonwood, Elm, and Willow. A few Cherry are found on the rocky bluffs.

Fruit-bearing trees on bottom or low land: Cherry and Plum.

Fruit-bearing vines on upland and low land: Grape.

Small fruits: The Currant only is found.

NORTON COUNTY.—By Phineas Tempest, Whitfield P. O.

Forest trees growing on upland: Ash, Cottonwood, Cedar, white and red Elm. On bottom or low land: Ash, Box Elder, Cottonwood, Cedar, red and white Elm, Hackberry, Walnut, and Willow.

Fruit-bearing trees on upland: Plum. On bottom or low land: Plum; Shrubs—Sand Plum, and Black Currant.

Nut-bearing trees on bottom or low land: Walnut.

Fruit-bearing vines on upland or low land: Grape.

Small fruits: Black Currants are found on sandy soil and crevices among the magnesia limestone and soft sandstone, and are generally found in gulches, deep and well protected from winds; are most plentiful in gulches running to the north. Of grapes, both summer and frost varieties thrive on the sand-beds along creeks, as well as among the timber.

OSAGE COUNTY.—By W. D. Jones, Barclay.

Forest trees growing on bottom or low land: Ash, Coffee Tree, Cottonwood, red and white Elm, Hackberry, Hickory, Linden, Honey Locust, white Maple, Sycamore, Black Walnut, Willow.

Fruit-bearing trees on bottom or low land: Mulberry, Pawpaw, and Plum.

Nut-bearing trees on bottom or low land: Hickory, and Black Walnut; Shrubs—Hazel.

Fruit-bearing vines on upland or low land: Summer and frost Grapes.

Small fruits: Strawberry, Blackberry, Gooseberry and Raspberry are generally found on bottom land, in or near the timber. Worthy of cultivation: Plum, fine varieties.

OSBORNE COUNTY.—By M. Mohler, Osborne City.

Of forest trees, there are none growing on the upland. On the bottom or low land: The Ash, Box Elder, Cottonwood, Elm, Walnut, Willow, and red Cedar are found.

Fruit-bearing trees on upland or low land: Plum.

Nut-bearing trees on bottom or low land: Walnut.

Fruit-growing vines on upland or low land: Grape. Vines and climbers found in forests or on the prairies: Grape and Ivy.

Small fruits: Gooseberry, Currant, and Raspberry are found in the ravines among the bluffs. Worthy of cultivation: Plum, Raspberry, Gooseberry, and Currant.

OTTAWA COUNTY.—By J. W. McLaren, Summerville.

There are no forest trees growing on the upland. On the bottom or low land: Ash, Box Elder, Cottonwood, Coffee Tree, Elm, Hackberry, Oak, Walnut, and Willow; Shrubs—Dogwood, Elder, Snowdrop, and Sumach.

Fruit-bearing trees on bottom or low land: Cherry, Mulberry, and Plum.

Fruit-bearing vines on upland or lowland: Grapes—two varieties.

Small fruits: Gooseberry and Blackberry are found growing on black, sandy loam skirting the timber along creeks. Currant is found on rocky bluffs facing north. Worthy of cultivation: Blackberry and Raspberry, being more hardy than the cultivated varieties.

PAWNEE COUNTY—BY C. C. CHEVALIER, GARFIELD.

Forest trees: White Ash, Cottonwood, Box Elder, Elm and Hackberry, are found on creek bottoms or second table lands, and a few on small islands in the Arkansas river; occasional specimens of the Willow, dwarfed form, are found in the swales, where the land is too wet to plow.

Fruit-bearing trees on upland or low land: Only the Plum.

Fruit-bearing vines on upland or low land: Frost Grape.

Small fruits: None of any class have been found growing wild in this county, that I have any knowledge of. Some varieties of plums are worthy of cultivation for *this* section of the State.

POTTAWATOMIE COUNTY.—BY ABNER ALLEN, WABAUNSEE.

Forest trees growing on upland: Blue Ash, pig-nut Hickory, pin, bur, red, Spanish and black-jack Oak, Black Walnut, and red Cedar; Shrubs—Indian Currant, and Sumach. On bottom or low land: White and blue Ash, Box Elder, Basswood, Kentucky Coffee Tree, Cottonwood, white and red Elm, Hackberry, pig-nut Hickory, Honey Locust, white Maple, red and burr Oak, red Cedar, Sycamore, black Walnut, and Willow; Shrubs—Prickly Ash, Buttonbush, Dogwood, Red Bud, Sumach, and Wahoo.

Fruit-bearing trees growing on upland: Crab Apple. On bottom or low-land: Mulberry, Pawpaw, and Plum.

Nut-bearing trees growing on upland: Shellbark and pig-nut Hickory, and Black Walnut. On bottom or low land: Pig-nut Hickory and Black Walnut.

Fruit-bearing vines growing on upland or lowland: Grapes, summer and frost varieties. Vines and climbers found in forests or on the prairies: Bitter Sweet, Greenbrier, Poison Ivy, Virginian Creeper, and Yellow Root.

Small Fruits: Strawberry is found on all kinds of soil and locations; Blackberry and Raspberry, similar soil and location as the Strawberry; Gooseberry, on the bottoms. The Dewberry is worthy of cultivation, also several fine varieties of Plums.

RENO COUNTY—BY A. S. DIMOCK, HUTCHINSON.

Forest trees growing on upland: White Ash, Box Elder, Cottonwood, and Hackberry; Shrubs—Elder and Sumach.

Forest trees growing on bottom or low land: Cottonwood, Box Elder, and Willow.

Fruit-bearing trees growing on upland: Sand Plum.

Fruit-bearing vines on upland or low land: Grapes, summer and frost. Vines and climbers found in forests or on the prairies: Poison Ivy, Virginian Creeper.

Small fruits: Very few Blackberries are found on sandy loam soil, on the elevations of the north portion of the county; what is supposed to be the Dewberry is also found. Worthy of cultivation: Plums of fine size, color and flavor.

REPUBLIC COUNTY.—BY J. A. MOSHER, BELLEVILLE.

Forest trees growing on upland: Gray Ash, Box Elder, Cottonwood, Hackberry, Honey Locust, bur Oak, and red Cedar. On bottom or low land: Gray Ash, Box Elder, Cottonwood, red and white Elm, Hackberry, Honey Locust, bur Oak, Black Walnut, and Willow.

Nut bearing trees on upland and low land: Black Walnut.

Fruit-bearing vines on upland or low land: Frost Grapes.

Small fruits: Strawberry, found only on upland; Gooseberry and Raspberry, two or three kinds found in this county.

RICE COUNTY.—BY J. B. SCHLICHTER, STERLING.

Forest trees growing on upland: None except Cottonwood, among the sand-hills, and a few bur and white Oak and Walnut along the bluffs in the northern part of the county. On bottom or low land: Ash, Box Elder, Cottonwood, Elm, and Hackberry.

Fruit-bearing trees on bottom or low land: Mulberry; Shrubs—Elderberry.

Nut-bearing trees on upland: Walnut.

Fruit-bearing vines on upland or low land: Summer Grape.

Small fruits: Gooseberry, Black Currant, large and fine, Raspberry, Black Cap variety, and Blackberry, on creek banks. The Dewberry is found on the bluffs. Worthy of cultivation: Currant, a valuable variety, and a Grape brought from Medicine river, reported to be a fine variety.

RILEY COUNTY—BY PROF. E. A. POPENOE, MANHATTAN.

Forest trees growing on upland: Red Cedar, Hop Hornbeam, and chestnut Oak; Shrubs—Dwarf and chestnut Oak, fragrant and smooth Sumach. On bottom or low land: Box Elder, Basswood, Kentucky Coffee Tree, Cottonwood, white and red Elm, pig-nut Hickory, Honey Locust, soft Maple, bur Oak, Sycamore, Black Walnut, and black Willow; Shrubs—Prickly Ash, Buttonbush, Bladdernut, Elder, Indian Currant, Red Bud, and Staff Tree.

Fruit-bearing trees on bottom or low land: Pawpaw.

Nut-bearing trees growing on bottom or low land: Black Walnut; Shrubs—Hazel.

Fruit-bearing vines on upland or low land: Grapes. Vines and climbers found in forests or on the prairies: Bitter Sweet, Ground Nut, Moon Seed, Star Cucumber, and Virginian Creeper.

Small fruits: Strawberry, Blackberry, Gooseberry and Raspberry are found on bottom lands in timbered sections.

ROOKS COUNTY.—BY J. F. MULLANEY, STOCKTON.

Forest trees growing on upland: Hackberry, bur Oak, and red Cedar. On bottom or low land: Ash, Box Elder, Cottonwood, Elm, Hackberry, Oak, and Walnut; Shrubs—Dwarf and red Willow.

Fruit-bearing trees on bottom or low land: Plum.

Fruit-bearing vines on upland or low land: Grape.

Small fruits: The Currant is found on deep gravelly soil, at the foot of bluffs along streams. The Sand Plum is worthy of cultivation in *this* county.

RUSH COUNTY.—BY BURR H. BUNN, RUSH CENTER.

Forest trees growing on bottom or low land: Ash, Box Elder, Cottonwood, Elm, Hackberry, and Walnut. There are greater numbers of Ash and Elm than of any others.

Fruit-bearing trees growing on bottom or low land: Black and choke Cherry, and Plum.

Fruit-bearing vines on upland or low land: Summer and frost Grapes. Vines and climbers found in forests or on the prairies: Morning Glory, Pea, and Sensitive Vine.

Worthy of cultivation: The plum is much improved.

RUSSELL COUNTY.—BY W. A. LEWIS, RUSSELL.

Forest trees do not grow on the uplands in this county, but the following are found on the bottom or low land: White Ash, Box Elder, Cottonwood, white and red Elm, Hackberry, white, red and bur Oak, and Black Walnut.

Fruit-bearing trees growing on bottom or low land: Plum.

Nut-bearing trees on bottom or low land: Black Walnut.

Small fruits: The Black Currant is found on sandy loam along the bottom land. Raspberries are found in cañons on sandy loam, but generally on stony ground and among underbrush. Grapes, both summer and frost. Worthy of cultivation: The native Blackberry does well when cultivated; berry medium size, good flavor; is much improved by cultivation and heavy mulching. It endures drouths and drying winds remarkably well. The Sand Plum, and a large variety known as "High Plum," are improved by cultivation, and are valuable, as they seem peculiarly adapted to the "Western plains."

SALINE COUNTY.—BY H. A. NORTHROP, SALINA.

Forest trees on bottom or low land: Ash, Box Elder, Cottonwood, red and white Elm, Hackberry, Honey Locust, bur Oak, Black Walnut, and Willow; Shrubs—Red Bud.

Fruit-bearing trees on upland: Mountain Cherry, and Sand Plum. On bottom or low land: Choke Cherry, Mulberry, and Plum.

Fruit-bearing vines on upland or low land: Grapes, summer and frost. Vines and climbers found in forests or on the prairies: Bitter Sweet, Cucumber, and American Ivy.

Small fruits: The Dewberry is found on the prairies. Gooseberries, Currants, three varieties, and Raspberries are found on the bluffs skirting small streams, sloping to the north. Worthy of cultivation: A blackcap Raspberry; hardy and productive; berry quite large. Rocky Mountain Currant; very hardy and productive.

SEDGWICK COUNTY.—BY J. G. SAMPSON, EL PASO, AND WM. MCCRACKEN, SUNNY DALE.

Forest trees growing on upland: Box Elder, Buttonwood, Cottonwood, red and white Elm, Hackberry, Kentucky Coffee Tree, Hickory, Honey Locust, Oak, Sycamore, and Walnut.

Fruit bearing trees growing on bottom or low land: Elderberry, Mulberry, and Sand Plum.

Nut-bearing trees on bottom or low land: Hickory, Pecan, and Walnut.

Fruit-bearing vines on upland or low land: Grape, summer and frost. Vines and climbers found in forests or on the prairies: Poison Ivy.

Small fruits: Gooseberry and Raspberry are found on black sandy loam, along the streams. Worthy of cultivation: Varieties of the Sand Plum, and Raspberry much preferable to any of the tame blackcap varieties.

SHAWNEE COUNTY.—BY THOMAS BUCKMAN, TOPEKA.

Forest trees growing on upland: White Ash, Cottonwood, Linden, Honey Locust, and white, bur, Spanish, scrub and black-jack Oak. On bottom or low land: Box Elder, Kentucky Coffee Tree, white and red Elm, Hackberry, shellbark and pig-nut Hickory, white Maple, Sycamore, Black Walnut, and Willow.

Fruit-bearing trees on upland: Cherry. On bottom or low land: Black Mulberry and Plum.

Nut-bearing trees on upland: Shellbark Hickory. On bottom or low land: Shellbark and pig-nut Hickory.

Fruit-bearing vines on upland or low land: Grapes, summer, autumn, and winter varieties. Vines and climbers found in forests or on the prairies: Bitter Sweet, Cucumber, Greenbrier, and Ivy.

Small fruits: Strawberry. On upland and bottoms, Blackberry; hillsides and bottoms, Gooseberry; bottoms, and sides of ravines where sheltered, Raspberry, two varieties (black and red).

SUMNER COUNTY.—BY A. C. SMITH, WELLINGTON.

Forest trees growing on upland: Ash, Box Elder, Cottonwood, white Elm, Hackberry, bur Oak, and Black Walnut.

Fruit-bearing trees growing on bottom or low land: Mulberry and Plum.

Nut-bearing trees growing on bottom or lowland: Black Walnut.

Fruit-bearing vines growing on upland or lowland: Grape. Vines and climbers found in forests or on the prairies: Ivy.

Small Fruits: The Dewberry is the only class found.

TREGO COUNTY—BY ARTHUR D. BAILEY, WA-KEENEY.

Forest trees growing on upland: None except transplanted trees. Here and there the Cherry and Cottonwood start up on plowed land; Sumach is found. On bottom or low land: Black and white Ash, Cottonwood, Dogwood, red, white and corky Elm, Hackberry, Wahoo and Willow.

Fruit-bearing trees growing on bottom or low land: Choke Cherry, red and yellow Plum.

Small fruits: The Missouri yellow-flowing Currant is found in timber along the streams.

Fruit-bearing vines growing on low land: Summer and frost Grapes are found along the streams. Worthy of cultivation: The Plum will repay for all care given it, and there are many shrubs and vines that will be valuable in an ornamentation of house-surroundings.

WABAUNSEE COUNTY.—BY H. A. STILES, PAVILION.

Forest trees growing on upland: White Ash, Box Elder, Basswood, Buckeye, Kentucky Coffee Tree, Cottonwood, Cedar, Dogwood, red and white Elm, Hackberry, Hickory, Ironwood, Honey Locust, white Maple, white, black-jack, chestnut and bur Oak, Wahoo, Black Walnut, and several varieties of Willow; Shrubs—Choke Cherry, Pigeon-bush, Prickly Ash, and Sumach. Those found on upland are also found on bottom or low land.

Shrubs growing on bottom or low land: Alder, Buffalo-berry, and Sumach.

Fruit-bearing trees growing on upland: Crab Apple, Pawpaw, and Plum. On bottom or low land: Elderberry, Buffalo-berry, Choke Cherry, Hawthorn, and Mulberry.

Nut-bearing trees and shrubs growing on upland and bottom land: Hazel, Hickory, and Black Walnut.

Fruit-bearing vines on upland or low land: Summer and frost Grapes. Vines and climbers found in the forests or on the prairies: Bitter Sweet, Poison Ivy, Woodbine, and Virginian Creeper.

Small fruits: Strawberry is found on bottoms and second bottoms; Blackberry on bottoms and in ravines; Gooseberry on wood-land bottoms and ravines; Currant on wood-land bottoms; Raspberry on hillsides, ravines, and bottom land.

WILSON COUNTY.—BY G. B. BROWN, GUILFORD.

Forest trees growing on upland: Shellbark Hickory, black and bur Oak; Shrubs—Prickly Ash; there are others, the names of which I am not familiar with. Trees growing on bottom or low land: Ash, Box Elder, Cottonwood, white and red Elm, Hackberry, Red Bud, Hickory, Linden, Maple, bur and red Oak, Sycamore, and Walnut.

Fruit-bearing trees on upland: Persimmon and Plum. On bottom or low land: Mulberry, Pawpaw, and Persimmon; Shrubs—Serviceberry.

Nut-bearing trees on upland: Hickory. On bottom or low land: Shellbark Hickory, white Pecan, and Walnut.

Fruit-bearing vines on upland or low land: Frost Grape. Vines and climbers found in forests or on the prairies: Ivy, and Rose.

Small fruits: Strawberry, Blackberry, Gooseberry, and Raspberry are generally found on bottoms or hillsides, under the bluffs, on black and limestone soil. Worthy of cultivation: Blackberry and Raspberry, on account of hardiness.

WOODSON COUNTY—BY W. W. SMITH, NEOSHO FALLS.

Forest trees growing on upland: Black jack Oak; Shrubs—Buffalo Brush, and Sumach. On bottom or low land: Ash, Kentucky Coffee Tree, Cottonwood, red and white Elm, Hackberry, shellbark and pig-nut Hickory, Honey Locust, white and ash-leafed Maple, red, white, bur and black-jack Oak, Sycamore, Black Walnut, Willow; Shrubs—Buffalo Brush, Elderberry, Buckeye, and Red Bud.

Fruit-bearing trees on upland: Persimmon and Plum. On bottom or low land: Cherry, red and black Haw, Mulberry, Pawpaw, Persimmon and Plum.

Nut-bearing trees growing on bottom or low land: Hickory, Pecan, Walnut; Shrubs—Hazel.

Fruit-bearing vines on upland or low land: Summer and frost Grapes. Vines and climbers found in forests or on the prairies: Poison Ivy and Roses.

Small fruits: Strawberry is found in the ravines on prairies; Blackberry and Gooseberry, on moist lands along creeks and in timber; Raspberry, in old orchards, fence corners, and by the side of hedges. Of the Blackberry, the upright, and trailing, or Dewberry are found. Worthy of cultivation: The Mulberry, and varieties of Plum.

WYANDOTTE COUNTY.—BY W. W. DICKINSON, WYANDOTTE.

Forest trees growing on upland: Ash, Box Elder, Kentucky Coffee Tree, Elm (2 var.), Hackberry, Hickory (1 var.), Hop, Hornbean, Honey Locust, Maple (2 var.), and Oak (7 var.); Shrubs—Buckthorn, Elder, Hardhack, and Red Bud; On bottom or low land: Ash, Box Elder, Kentucky Coffee Tree, Cottonwood, Elm (2 var.), Honey Locust, white Maple, Oak (2 var.), Sycamore, and Willow; Shrubs—Dogwood, Hardhack, Red Bud, and Thorn.

Fruit-bearing trees on upland: Crab Apple, Cherry, Elderberry, Pawpaw, Persimmon, and Plum. On bottom or low land: Mulberry.

Nut-bearing trees and shrubs on upland: Pecan and Hazel.

Fruit-bearing vines on upland or low land: Grapes (3 var.) Vines and climbers found in forests or on the prairies: Bitter Sweet, Ivy, and Roses.

Small fruits: The Strawberry is found on the prairie in sheltered places; the Blackberry, Gooseberry, and Raspberry are found on good soils, along fences in the timber, and on bluffs not grazed by animals. But one variety of each is found, excepting of Blackberry and Raspberry; there are two worthy of cultivation, and the Persimmon.

[The counties following were not received in time for insertion in their proper places.]

ANDERSON COUNTY.—BY M. A. PAGE, GARNETT.

Forest trees on upland: White and blue Ash, Box Elder, Coffee Tree, Cottonwood, red and white Elm, Hackberry, pig-nut Hickory, black-jack Oak, Walnut; Shrubs—Dwarf Oak, Sumach, prairie Willow. On bottom or low land: Blue Ash, Cottonwood, white Elm, shellbark Hickory, Ironwood, Linden, white and sugar Maple, black, Spanish, white and swamp Oak, Red Bud, Walnut, Whitewood; Shrubs—Dogwood, Sumach, Willow.

Fruit-bearing trees growing on upland: Cherry, Haw, Persimmon, and Plum. On bottom or low land: Pawpaw, and Plum.

Nut-bearing trees on upland: Hickory (three varieties), and Black Walnut. On bottom or low land: Walnut, and Hazel.

Fruit-bearing vines on upland or low land: Grape. Vines and climbers found in forests or on the prairies: Trumpet Flower.

Small fruits: Strawberry, found on prairie, Blackberry, on prairie (loam, with clay subsoil), Gooseberry, on prairie, Raspberry, all classes of soil and locations. Of Strawberry, there are two kinds — first, a necked fruit, borne on tall fruit-stalk, leaf large and long; second resembles Wilson's Albany in fruit and plant. Of Blackberry, there are two kinds — first, low, stout, dark-colored cane; second, cane yellow. Worthy of cultivation: Persimmon, fruit large, skin thin, pulp juicy, rich, seed very small — a superior fruit.

CHEROKEE COUNTY.—BY THOS. W. SMITH, BAXTER SPRINGS.

Forest trees on upland: Pig-nut Hickory, black, black-jack, post and red Oak, Sassafras; Shrubs—Dogwood, Sumach. On bottom or low land: White Ash, Birch, Box Elder, Coffee Tree, Cottonwood, Dogwood, red and white Elm, Hackberry, shellbark Hickory, Ironwood, Locust, white and sugar Maple, post Oak, Red Bud, Sycamore, Walnut, Willow; Shrubs—Prickly Ash, Thorn, Wahoo.

Fruit-bearing trees on upland: Persimmon. On bottom or low land: Cherry, Mulberry, Pawpaw; Shrubs — Serviceberry.

Nut-bearing trees on upland: Hickory. On bottom or low land: Hickory, Pecan, Black Walnut.

Fruit-bearing vines on upland or lowland: Grape — a variety nearly equal to the Concord in size, quality good, constantly productive; summer and frost varieties are found. Vines and climbers found in forests or on the prairies: Ivy, Trumpet Flower.

Small fruits: Strawberry is found on the prairies, at the edges of the timber; Gooseberry, on bottom or low land; Raspberry and Blackberry, on cleared ground. The Dewberry is found in this county. Worthy of cultivation: Persimmon, Blackberry, Gooseberry.

WASHINGTON COUNTY.—BY CHAS. WILLIAMSON, WASHINGTON.

Forest trees on upland: Wafer Ash, Cottonwood, red and white Elm, Hackberry, Hickory, Linden, Locust, white Maple, black and white Oak, Walnut, Willow. On bottom or low land: White, black and wafer Ash, Linden, Cottonwood, Coffee Tree, Hackberry, Hickory, honey and thorn Locust, white Maple, Mulberry, white, black and red Oak, Sycamore, Walnut; Shrubs — Prickly Ash, Dogwood, Leatherwood.

Fruit-bearing trees on upland: Mulberry, Plum. On bottom or low land: Cherry, Mulberry, Plum; Shrubs—Elder.

Nut-bearing trees: Hickory, Walnut.

Fruit-bearing vines on upland or low land: Grape, summer and frost. Vines and climbers found in forests or on prairie: Bitter Sweet, Cucumber, Greenbrier, poison Ivy, Sensitive Brier, Virginia Creeper, Rose.

Small fruits: Strawberry is found on second bottom; Gooseberry and Raspberry on bottom land. Worthy of cultivation: Variety of Raspberry and Blackberry.

DISTRICT REPORTS.

NORTHERN FRUIT DISTRICT.

Note.—These reports are based on the reports of the County Vice Presidents for the year.

The territory of this district includes the following counties: Atchison, Brown, Clay, Cloud, Davis, Dickinson, Doniphan, Ellis, Ellsworth, Graham, Jewell, Jackson, Jefferson, Leavenworth, Lincoln, Marshall, Mitchell, Nemaha, Osborne, Pottawatomie, Phillips, Republic, Riley, Rooks, Russell, Smith, Saline, Shawnee, Trego, Wyandotte, and Washington. Total number of counties, 31; number of counties reporting, 30.

The reports of the Vice Presidents for these counties show the following condition of horticulture in the Northern Fruit District, at the close of the year 1879:

CONDITION OF ORCHARDS.

Apples.—In eight counties, excellent; nineteen, good; three, fair.

Peaches.—In six counties, excellent; thirteen, good; four, fair; four, poor.

Pears.—In six counties, excellent; fourteen, good; three, fair; six, poor; one, failure.

Plums.—In four counties, excellent; fifteen, good; four, fair; 1, poor.

Cherries.—In five counties, excellent; sixteen, good; three, fair.

INJURY RESULTING FROM THE HIGH TEMPERATURE OF PAST AUTUMN.

Apples.—Twenty-three counties report none; five, light.

Peaches.—Twenty counties report none; seven, light.

Pears.—Nineteen counties report none; four, light.

Plums.—Twenty-four counties report none; four, light.

Cherries.—Twenty-three counties report none; two, light.

EXTENT OF ORCHARDS PLANTED.

Apples.—Twenty-one counties report larger than in any year before; four, average of other years; one, light.

Peaches.—Sixteen counties report large; six, average of other years; five, light.

Pears.—Ten counties report large; eight, average of other years; seven, light.

Plums.—Eleven counties report large; seven, average of other years; eight, light.

Cherries.—Fifteen counties report large; seven, average of other years; three, small.

VARIETIES PLANTED LARGELY.

Apples.—Summer: Early Harvest, Carolina Red June, Red Astrachan, Cooper's Early White, Gramar Pearmain, Early Pennock, Hightop Sweet, Large Yellow Bough, Alexander, Keswick Codlin, Fourth of July. Autumn: Lowell, Maiden's Blush, Autumn Strawberry, Rambo, Fameuse, Fall Wine, Bailey's Sweet, Rome Beauty, Smith's Cider. Winter: Jonathan, Grimes's Golden, Dominie, Wagener, Talman's Sweet, Hubbardston Nonsuch, Pennock, Colvert, Jersey Sweet, Milam, King of Tompkins County, Fallawater, White Winter Pearmain, Yellow Bellflower, Winesap, Missouri Pippin, Willow Twig, Huntsman's Favorite, White Pippin, Rawles Genet, Ben Davis, McAfee's Nonsuch, Minkler, Gilpin, Lawver.

Peaches.—Alexander, Amsden's June, Early Beatrice, Early Rivers, Wyandotte Chief, Hale's Early, Crawford's Early, Troth's Early, Large Early York, George the Fourth, Stump-the-World, Foster, Smock, Old Mixon Free and Cling, Crawford's Late, Ward's Late Free, Blood Cling, Heath Cling, and in many places largely Kansas-grown seedlings.

Pears.—Madeleine, Buffum, Flemish Beauty, White Doyenne, Bartlett, Howell, Sheldon, Louise Bonne de Jersey, Duchesse d'Angouleme, Beurre d'Anjou, Beurre d'Aremberg, Clapp's Favorite, Seckel, Vicar of Winkfield, Lawrence.

Plums.—Wild Goose, Lombard, Green Gage, Huling's Superb, Washington, Columbia, Duane's Purple, Yellow Egg, Coe's Golden Drop, Imperial Gage, Emigrant, Weaver, Sand, Miner, selected native varieties.

Cherries.—May Duke, Early Richmond, Reine Hortense, Gov. Wood, Yellow Spanish, Kentish (*syn.* Montmorency), Belle Magnifique, Late Richmond, Late Duke, English Morello, Common Morello.

LOSSES IN THE PLANTING.

Generally light in the district; in some localities rather heavier than usually attends transplanting. The causes for failures are reported to be: weak condition of the trees, unfavorable weather at the time of planting, carelessness in planting and after culture. Much complaint is made against the stock of trees shipped from without the State—being the refuse of nurseries, nearly dead when received.

WOOD GROWTH.

Apples.—Three counties report extra; sixteen, good; six, fair; four, light.

Peaches.—Four counties report extra; eighteen, good to very good; three, fair; two, poor. The old peach trees are reported largely dead, or in a very low condition of life.

Pears.—Three counties report extra; seventeen, good; two, fair; five, light.

Plums.—Two counties report extra; eighteen, good; six, fair; two, poor.

Cherries.—Two counties report extra; fifteen, good; six, fair; five, light.

PRESENT INDICATIONS FOR A CROP OF FRUIT IN 1880.

Apples.—Twelve counties report very good; thirteen, good; one, fair; one, poor; four, trees too young.

Peaches.—Six counties report very good; nine, good; three, fair; three, poor; one, trees too young.

Pears.—Five counties report very good; six, good; two, fair; four, poor; five, trees too young.

Plums.—Four counties report very good; fourteen, good; two, fair; three, poor; one, trees too young.

Cherries.—Three counties report very good; fifteen, good; four, fair; one, poor.

Grapes.—Two counties report very good; eighteen, good; three, fair; one, poor.

Strawberries.—Two counties report very good; nine, good; five, fair; five, poor.

Raspberries.—Two counties report very good; sixteen, good; three, fair; three, poor.

Currants.—One county reports very good; ten, good; three, poor.

Blackberries.—Two counties report very good; thirteen, good; one, fair; one, poor.

Gooseberries.—Two counties report very good; fifteen, good; one, fair; three, poor.

SMALL FRUITS OF RECENT INTRODUCTION REPORTED AS PROMISING.

Strawberries.—Monarch of the West, Crescent Seedling, Captain Jack, Cumberland Triumph, Prouty's Seedling, Star of the West.

Raspberries.—Gregg, Turner, Brandywine, Highland Hardy, Norwood, Herstine, Thwack, Bristol, Ganargua.

Blackberries.—Snyder, Western Triumph, Taylor's Prolific, Branton's Early.

Gooseberries.—Downing, Smith's Improved, Early Kent.

TRIAL OF THE QUINCE.

Four counties report success in special localities; seven, rather poor results; five, failure; fifteen, not tried.

MULCHING FOR SMALL FRUITS.

Twenty-one counties report very beneficial; eleven, not tried.

SHADING OF SMALL FRUITS.

Nine counties recommend a partial shade; balance not tried.

NEW SEEDLING FRUIT OF KANSAS ORIGIN.

Peaches.—Promising varieties are reported originating in the counties of Clay, Davis, Dickinson, Ellsworth, Jackson, Pottawatomie, Republic, Riley and Wyandotte.

Plums.—In Ellis, Republic and Riley.

Blackberries.—A fine, very early variety reported in Dickinson county.

DISEASES.

Rust is reported to a limited extent in ten counties, appearing on the leaves of the grape, blackberry and raspberry. Causes: Neglect and abusive treatment, and generally appears during hot weather following a vigorous wood growth. Remedy recommended: Good culture for rich soils, and a light mulch for poor soils.

PRUNING VINES AND SMALL FRUITS.

For pruning grape vines the general recommendation as to the proper time is during mild weather in winter, and never later than the 1st of March. The long arm with spur pruning, and the renewal system, have been successfully practiced.

For blackberries and raspberries, heading back the canes to about three feet during growing season, and shortening of the lateral growth either in autumn or early spring, are reported as producing the finest results.

Gooseberries and currants should have the stools thinned of all weak shoots, and when the growth of either is very rank it should be shortened in in late autumn, or as soon as the leaves drop.

NUT-BEARING TREES CULTIVATED.

Black walnut, Spanish and American sweet chestnut, pecan, hard-shelled almond and butternut.

MISCELLANEOUS FRUITS CULTIVATED.

Barberry, buffalo-berry, mulberry, persimmon, serviceberry.

FORESTRY—VARIETIES SUCCESSFULLY CULTIVATED.

Ailanthus, birch, catalpa, wild cherry, larch, honey locust, white maple, Osage orange, silver-leafed poplar, sycamore, golden willow.

EVERGREENS.

Twenty-five counties report entire success with the red cedar; thirteen counties, the black Austrian pine; ten counties, the Scotch pine and others, as the Norway spruce, white pine, mountain pine, balsam fir and arbor vitæ, succeed in some localities.

FOREST TREES SUCCESSFULLY USED IN ARTIFICIAL FORESTS, GROVES AND BELTS.

Ailanthus, red, white and green ash, box elder, catalpa, cottonwood, red and white elm, hackberry, honey and black locust, white maple, mulberry, oak, Lombardy and silver-leafed poplar, black walnut, golden willow.

INSECTS ATTACKING FOREST TREES.

Maple worms, May beetles, borers (in the ash, box elder, cottonwood, elm), and a twig pruner.

ORNAMENTALS SUCCESSFULLY TRANSPLANTED.

Trees.—Box elder, catalpa, white elm, larch, honey locust, white maple, Lombardy and silver-leafed poplar, sycamore, wahoo, weeping willow.

Shrubs.—Althea, acacia, flowering almond, barberry, forsythia, hydrangea, Japan quince, lilac, California privet, red bud, tamarix, spirea, sweet-scented shrub, snowball, strawberry tree, syringa.

Climbers.—Honeysuckle, trumpet flower, American ivy, wistaria.

Roses.—All the hardy classes.

Hedges.—Barberry, Japan quince, privet, red cedar.

Lawns.—Fifteen counties report Kentucky blue-grass a success for such purposes.

There is a strong love manifested by the people of this district for beautiful lawns, trees and flowering plants around the home, and as their means increase more extensive investments will be made in ornamentation.

STATISTICS FOR THE DISTRICT.

Acres in small fruits	**4,311.91**
Acres in vineyards	**1,391.53**
Total number of bearing trees:	
Apple	**590,655**
Peach	**1,387,618**
Pear	**18,904**
Plum	**54,390**
Cherry	**158,202**
Total number of fruit trees not bearing:	
Apple	**1,238,597**
Peach	**1,188,305**
Pear	**46,707**
Plum	**89,081**
Cherry	**184,517**

CENTRAL FRUIT DISTRICT.

This district embraces the counties of Anderson, Barton, Chase, Coffey, Douglas, Edwards, Franklin, Harvey, Hodgeman, Johnson, Linn, Lyon, Marion, McPherson, Miami, Morris, Ness, Osage, Pawnee, Reno, Rice, Rush, Sequoyah, and Wabaunsee. Total number of counties, 24; number of counties reporting, 18.

CONDITION OF ORCHARDS.

Apples.—Three counties report very good; twelve, good; one, fair; one, poor.

Peaches.—Seven counties, good; four, fair; five, poor; one, trees too young to bear.

Pears.—One county very good; eight, good; three, fair; two, poor.

Plums.—Two counties very good; twelve, good.

Cherries.—Three counties very good; eleven, good; one, fair.

INJURY RESULTING FROM THE HIGH TEMPERATURE OF PAST AUTUMN.

Apples.—Fourteen counties report none; two, light.

Peaches.—Fifteen counties report none; one, light.

Pears.—Thirteen counties report none; three, light.

Plums.—Sixteen counties report none.

Cherries.—Sixteen counties report none.

EXTENT OF ORCHARDS PLANTED.

Apples.—Ten counties report large; three, an average with other years; three, small.

Peaches.—Seven counties report large; four, an average with other years; five, small.

Pears.—Five counties report large; four, an average with other years; six, small.

Plums.—Four counties report large; five, an average with other years; seven, small.

Cherries.—Seven counties report large; three, an average with other years; six, small.

VARIETIES PLANTED LARGELY.

Apples.—Summer: Early Harvest, Carolina Red June, Red Astrachan, Cooper's Early White, American Summer Pearmain, Early Pennock, Lowell, Gramar Pearmain. Autumn: Maiden's Blush, Rambo, Fameuse, Fall Wine, Rome Beauty, Fall Pippin. Winter: Jonathan, Smith's Cider, Romanstem, Wine, Dominie, Talman's Sweet, Missouri Pippin, Grimes's Golden, Lady Apple, Swaar, Huntsman's Favorite, Willow Twig, Winesap, Rawles Genet, Ben Davis, Gilpin, Lawver.

Peaches.—Alexander, Amsden's June, Early Beatrice, Early Briggs, Hale's Early, Early York, Crawford's Early, Stump-the-World, Snow, Foster, Old Mixon, Crawford's Late, Ward's Late Free, Lemon Cling, Blood Cling, Heath Cling.

Pears.—Belle Lucrative, Bartlett, Flemish Beauty, Buffum, Howell, Clapp's Favorite, Louise Bonne de Jersey, Duchess d'Angouleme, Seckel, Souvenir du Congres.

Plums.—Wild Goose, Miner, Sand.

Cherries.—May Duke, Early Richmond, King's Early, Belle Magnifique, Leib, Late Richmond, English Morello, Common Morello.

FAILURES IN PLANTING

Were not heavy in the entire district, but from the reports were an average of previous years.

The causes of failure are reported: Unfavorable weather at time of planting, a bad condition of trees planted, and neglect thereafter.

WOOD GROWTH.

Apples.—Generally good.

Peaches.—Generally fair; good to very good on young trees; poor on old trees.

Pears.—Generally fair.

Plums.—Generally good.

Cherries.—Generally good.

PRESENT INDICATIONS FOR A CROP OF FRUIT IN 1880.

Apples.—Three counties report very good; eleven, good; two, light.

Peaches.—Three counties report very good; seven, good; three, fair; one, light; one, poor.

Pears.—Three counties report very good; eight, good; one, fair; two, light.

Plums.—Five counties report very good; ten, good; one, fair.

Cherries.—Three counties report very good; ten, good; three, fair.

Grapes.—Two counties report very good; eleven, good; one, fair.

Strawberries.—Two counties report very good; ten, good; one, fair.

Raspberries.—One county reports very good; twelve, good; one, fair; one, poor.

Currants.—One county reports very good; six, good; one, fair.

Blackberries.—Eleven counties report good; two, fair; one, poor.

Gooseberries.—Two counties report very good; ten, good; one, fair.

TRIAL OF THE QUINCE.

The quince has been tried in thirteen counties, and seven report it doing well in localities, one fair, and five a general failure. One county reports it as easily grown as the apple; another, successful when grown in rich, moist soil, and sheltered from the winds.

MULCHING OF SMALL FRUITS.

Mulching for small fruit has been tried, and recommended as a success, in fifteen counties. Also, shading of the currant necessary to success.

NEW VARIETIES OF SMALL FRUITS SUCCESSFULLY INTRODUCED.

Strawberries.—Crescent Seedling, Sharpless, Forest Rose, Durand's Beauty, Crystal White, Captain Jack, Glendale.

Raspberries.—Turner, Thwack, Henrietta, Pride of the Hudson, Gregg.

Gooseberries.—Smith's Improved.

SEEDLING FRUITS OF KANSAS ORIGIN.

Apples.—Promising varieties in Miami, Johnson, and Wabaunsee counties.

Peaches.—In Harvey, Linn, Lyon, Miami, Osage, Reno, Rice, and Wabaunsee counties.

Plums.—In Harvey and Rice counties.

Strawberries.—In Johnson county.

Raspberries.—In Wabaunsee counties.

RUST.

Rust has appeared on the leaf of the grapes, blackberries, and raspberries in seven counties. Cause reported: Produced by drouth and hot suns. Remedy: Remove all plants affected, and burn them.

PRUNING VINES AND SMALL FRUITS.

Grape-vines.—Long arm, with current year's growth pruned to spurs in Februrary and fore part of March.

Blackberries and Raspberries.—Head back the canes during the growing season to three feet, and shorten-in the lateral growth in the autumn, or early spring, to one or two feet.

Gooseberries.—Thin out the wood in March, and shorten-in the straggling growth.

NUT-BEARING TREES SUCCESSFULLY CULTIVATED.

American chestnut, pecan, black walnut.

MISCELLANEOUS FRUITS CULTIVATED.

Barberry, red mulberry, Russian mulberry, persimmon, service-berry.

FORESTRY—VARIETIES SUCCESSFULLY INTRODUCED AND CULTIVATED.

Ailanthus, red, white and green ash, balm of Gilead, box elder, catalpa, cherry, cottonwood, coffee tree, English and American elm, hackberry, hickory, honey and black locust, hard and soft maple, Osage orange, silver-leafed and Lombardy poplar, sycamore, white and golden willow, black walnut.

EVERGREENS SUCCESSFULLY TRANSPLANTED.

Arbor vitæ, balsam fir, red cedar, Irish juniper, black Austrian, Scotch, white pine, spruce, savin.

INSECTS ATTACKING FOREST TREES.

Borers (in box elder, elm, hackberry, maple, mulberry, mountain ash, poplar), maple worm, and a small light green worm injured the foliage on cottonwood trees in August.

ORNAMENTALS SUCCESSFULLY INTRODUCED.

Trees.—Ailanthus, catalpa, cut-leafed birch, chestnut, white mulberry, mountain ash, Lombardy poplar, tulip tree, weeping willow.

Shrubs.—Flowering almond, althea, rose acacia, barberry, deutzia, forsythia, hydrangea, Japan quince, lilac, purple fringe, privet, snowball, spirea, syringa, upright honeysuckle, weigelia.

Climbers.—American ivy, honeysuckle, trumpet flower, wistaria.

Roses.—All hardy classes are a success under ordinary treatment.

Hedges.—Barberry, Japan quince, laurel-leafed willow, lilac, privet, roses, red cedar, spirea, syringa, upright honeysuckle, weigelia.

Lawns.—Eleven counties report success with Kentucky blue-grass and white clover; in one county white clover fails.

There is a general disposition to beautify around the house with lawns, trees and flowers.

STATISTICS FOR THE DISTRICT.

Acres in small fruits	671.68
Acres in vineyards	1,117.31
Total number of bearing trees:	
Apple	659,860
Peach	1,082,698
Pear	21,908
Plum	45,815
Cherry	231,869
Total number of fruit trees not bearing:	
Apple	1,143,180
Peach	1,076,684
Pear	42,488
Plum	72,509
Cherry	659,860

SOUTHERN DISTRICT.

This district embraces the following counties: Allen, Barbour, Butler, Bourbon, Chautauqua, Cherokee, Comanche, Cowley, Crawford, Elk, Ford, Greenwood, Harper, Kingman, Labette, Montgomery, Neosho, Sedgwick, Sumner, Wilson, and Woodson. Total number of counties, 21; number of counties reporting, 19.

CONDITION OF ORCHARDS.

Apples.—Eight counties report very good; nine, good; two, poor.

Peaches.—Two counties report very good; eleven, good; one, fair; five, poor.

Pears.—Two counties report very good; ten, good; two, fair; three, poor.

Plums.—Four counties report very good; thirteen, good; two, poor.

Cherries.—Three counties report very good; fourteen, good; two, poor.

INJURY RESULTING FROM THE HIGH TEMPERATURE OF THE PAST AUTUMN.

Apples.—Sixteen counties report none; three, light.

Peaches.—Seventeen counties report none; two, light.

Pears.—Sixteen counties report none; three, light.

Plums.—Seventeen counties report none; one, light.

Cherries.—Eighteen counties report none; one, light.

EXTENT OF ORCHARD PLANTING.

Apples.—Fourteen counties report large; three, an average of other years; one, small.

Peaches.—Ten counties report large; five, an average of other years; three, small.

Pears.—Four counties report large; seven, an average of other years; seven, small.

Plums.—Nine counties report large; six, an average of other years; three, small.

Cherries.—Ten counties report large; six, an average of other years; two, small.

VARIETIES PLANTED LARGELY.

Apples.—Summer: Early Harvest, Carolina Red June, Red Astrachan, Lowell. Autumn: Maiden's Blush, Rambo, Rome Beauty. Winter: Jonathan, Grimes's Golden, White Winter Pearmain, Missouri Pippin, Willow Twig, Winesap, Rawles Genet, Ben Davis, Stark, Gilpin, Limber Twig.

Peaches.—Alexander, Amsden's June, Slater, Hale's Early, Early York, Crawford's Early, Early Rivers, Stump-the-World, Smock, Foster, Steadly, Crawford's Late, Old Mixon Free, Ward's Late Free, Heath Cling, Druid Hill.

Pears.—Osband's Summer, Harvest, Bartlett, Flemish Beauty, Clapp's

Favorite, Duchesse d'Angouleme, Louise Bonne de Jersey, Vicar of Winkfield, Glout Morceau.

Plums.—Wild Goose, Washington, Lombard, Green Gage, Damson, Sand, Miner, Duane's Purple, Pond's Seedling.

Cherries.—May Duke, Early Richmond, Governor Wood, Reine Hortense, Leib, Late Richmond, English Morello, Common Morello.

FAILURES IN PLANTING.

Were generally heavier than usual, and are attributed to a weak condition of the trees used, unfavorable weather at and following the planting season, and neglect.

WOOD GROWTH.

Apples.—Four counties report large; ten, medium; three, small.

Peaches.—Four counties report large; seven, medium; seven, small.

Pears.—Three counties report large; twelve, medium; three, small.

Plums.—Three counties report large; twelve, medium; three, small.

Cherries.—Four counties report large; ten, medium; three, small.

PRESENT INDICATIONS FOR A CROP OF FRUIT IN 1880.

Apples.—Three counties report very good; fourteen, good.

Peaches.—Four counties report very good; thirteen, good.

Pears.—One county reports very good; fifteen, good; one, poor.

Plums.—One county reports very good; fourteen, good.

Cherries.—Two counties report very good; fifteen, good.

Grapes.—Two counties report very good; fifteen, good.

Strawberries.—Two counties report very good; twelve, good; three, poor.

Raspberries.—Two counties report very good; fourteen, good.

Currants.—One county reports very good; ten, good.

Blackberries.—Three counties report very good; fifteen, good.

Gooseberries.—Two counties report very good; fifteen, good; one, poor.

THE QUINCE

Has been tried in seventeen counties, and is a success in ten; partial success in four; and a failure in three counties.

MULCHING FOR SMALL FRUITS.

Fifteen counties recommend its use as highly beneficial; and shade for currants indispensable.

NEW FRUITS INTRODUCED.

Strawberries.—Cutter's Seedling, Great American.

Raspberries.—Gregg, Turner, Herstine.

Blackberries.—Snyder.

NEW FRUITS OF KANSAS ORIGIN.

Peaches.—Very promising early varieties are reported in the following counties: Allen, Bourbon, Butler, Chautauqua, Cherokee, Cowley, Neosho, Sedgwick, and Woodson.

RUST.

Rust is reported in five counties on the leaves of grape-vines and blackberries, caused by poor soil, and hot sun immediately following heavy rains.

NUT-BEARING TREES CULTIVATED.

Hard shelled almond, butternut, chestnut, pecan, black walnut.

MISCELLANEOUS FRUITS CULTIVATED.

Barberry, red and Russian mulberry, persimmon, serviceberry.

PRUNING VINES AND SMALL FRUITS.

Grape-vines.—The long arm and spur and renewal system succeeds.

Blackberries and Raspberries.—Head back the canes during the growing season, and the lateral growth in autumn or spring.

FORESTRY—VARIETIES SUCCESSFULLY INTRODUCED AND UNDER CULTIVATION.

Ailanthus, birch, catalpa, black locust, Lombardy poplar, Osage orange, pride of China, white willow.

VARIETIES SUCCESSFULLY CULTIVATED IN ARTIFICIAL FORESTS, GROVES AND BELTS.

Ailanthus, ash, box elder, catalpa, cottonwood, Kentucky coffee tree, red and white elm, hackberry, honey locust, Lombardy poplar, white maple, mulberry, Osage orange, sycamore, black walnut, white willow.

EVERGREENS SUCCESSFULLY PLANTED.

Red cedar, black Austrian, Scotch and white pine generally succeed, and arbor vitæ, balsam fir, Irish juniper and Norway spruce locally.

INSECTS INJURIOUS TO FOREST TREES.

Borers attack box elder, maple, mulberry, cottonwood, gray ash and black locust, and a worm works on the leaves of the oak, poplar, maple and cottonwood.

ORNAMENTALS SUCCESSFULLY PLANTED.

Trees.—Abele, ailanthus, balm of Gilead, black locust, English alder, Lombardy poplar, mountain ash, red bud, red birch.

Shrubs.—Althea, flowering almond, rose acacia, deutzia, forsythia, Japan quince, lilac, Missouri flowering currant, purple fringe, syringa, snowball, spirea, trumpet flower, tamarix.

Climbers.—Honeysuckle, wistaria.

Roses.—All the hardy classes are successful in this district.

Hedges.—Privet, red cedar and the native roses are generally successful; the arbor vitæ, and a new plant, the pyricanth, in localities.

Lawns.—Ten counties recommend as successful the Kentucky blue-grass; three, Kentucky blue-grass and white clover; four, a partial success.

There is a disposition manifested generally by the people to adorn the home surroundings with lawns, trees and attractive flowering plants.

STATISTICS FOR THE DISTRICT.

Acres in small fruits	952.95
Acres in vineyards	1,004.31
Total number of bearing trees:	
Apple	618,266
Peach	2,164,556
Pear	17,792
Plum	50,139
Cherry	169,607

Total number of fruit trees not bearing:	
Apple	1,536,645
Peach	1,512,542
Pear	61,381
Plum	79,919
Cherry	287,590

COUNTY REPORTS.

These reports have been made in answer to the following circular:

[Circular No. 4.]

Secretary's Office, Kansas State Horticultural Society,
Lawrence, January 1, 1880.

Dear Sir: With pleasure I tender you the appointment of Vice President in the Kansas State Horticultural Society for your county, by request of the President, believing that your relations to the horticultural interests of our adopted State will lead you to earnestly and promptly engage in the work of said office, as defined in Article VII of the Constitution of this Society, which is as follows:

> "There shall be a vice president annually appointed in each county in the State, whose duty it shall be to organize local horticultural societies in their respective counties whenever practicable, to report to each annual meeting on the general subject of horticulture, and to look after the interests of horticulture in their respective localities."

Article III of the Constitution was amended at the Thirteenth Annual Meeting, as follows:

> "Any person who, under the appointment of the President, shall perform the duties of a county vice president for one year, shall be enrolled an annual member for that year, and in consideration of such service for ten years, shall be enrolled a life member, and entitled to all the privileges of such membership."

The following series of questions are submitted as embracing subjects of a local and general importance, to which the Society desires to direct your attention, and upon which your report, as far as practicable, should be made. Any suggestions of interest to those engaged in horticulture, upon other subjects than those herein named, will receive proper consideration by this Society.

FRUITS.

What is the condition of orchards in your county at the present date? Apple, peach, pear, plum, cherry.

Do you discover any injury resulting from the high temperature of the past autumn? Apple, peach, pear, plum, cherry.

To what extent have orchards been planted during 1879? Apple, peach, pear, plum, cherry.

What varieties planted, largely? Apple, peach, pear, plum, cherry.

What proportion failed? Apple, peach, pear, plum, cherry.

To what do you attribute the failure — the drouth of 1879, or weakened condition of trees caused by the extreme low temperature during the winter of 1878 and 1879?

What was the wood growth of 1879? Apple, peach, pear, plum, cherry.

What are the present indications for a crop of fruit in 1880, age of plantations considered? Apples, peaches, pears, plums, cherries, grapes, strawberries, blackberries, currants, gooseberries, raspberries.

Has the quince been thoroughly tried? If so, with what results?

What have been the effects of mulching and shading of small fruits?

Have any of the new varieties of small fruits been planted? If so, name them. Have they succeeded? Strawberry, blackberry, currant, gooseberry, raspberry.

Do you know of any new seedling fruits, originating in Kansas, which have proved to be worthy of propagation? Apples, peaches, pears, plums, cherries, strawberries, blackberries, currants, gooseberries, raspberries.

Have the leaves of grape-vines, and any of the small fruits, suffered from rust during the past or any prior year?

Under what circumstances does it occur?

What successful remedies have been tried?

Please state your method of pruning the grape, blackberry, gooseberry, raspberry, currant, and the proper season for such work.

MISCELLANEOUS.

Are nut-bearing trees cultivated in your county? If so, what varieties?

Are such fruits as the buffalo-berry, barberry, mulberry, pawpaw, persimmon, and serviceberry (*syn.* Juneberry), cultivated in your county?

FORESTRY.

What varieties of forest trees have been successfully introduced?

What varieties of trees have been successfully cultivated in artificial forests, groves and belts?

Has the red cedar, or other evergreens, been successfully planted?

What varieties of forest trees have been planted, and generally fail?

Are there any insects destroying any of the native or artificial forests? If so, what variety of tree, and what is the character of insect?

ORNAMENTALS.

What varieties of ornamental trees and shrubs have been successfully introduced?

What varieties of roses succeed? Moss, provence, damask, hybrid China, hybrid Bourbon, hybrid perpetual (autumnal bloomers), climbing.

What choice varieties of hardy herbaceous flowering plants have been successfully grown?

What varieties of plants have been successfully used for ornamental hedges?

Does the Kentucky blue-grass and white clover succeed for lawn purposes?

Do your people manifest a love for beautifying the home surroundings with lawns, trees, and a profusion of attractive flowering plants?

COUNTY STATISTICS.

Area of forest trees in the county, area of fruit trees, area of small fruits, area of vineyards, total number bearing fruit trees, total number non-bearing fruit trees.

Very respectfully, G. C. BRACKETT.

ALLEN COUNTY.

BY H. E. VAN DEMAN, GENEVA, AND C. C. KELSEY, HUMBOLDT.

FRUITS.

The present condition of orchards of all classes of fruit, good, excepting the peach. Do not discover any injury resulting from the high temperature of the past autumn. The extent of orchard planting was equal to previous years. The following varieties have been planted largely:

Apples: Missouri Pippin, Winesap, Rome Beauty, Jonathan, Ben Davis, Rawles Genet, Willow Twig, Limber Twig, Maiden's Blush. *Peaches:* Amsden's June, Heath Cling, Hale's Early, Old Mixon Free, Crawford's Early and Late. *Pears:* Bartlett, Flemish Beauty, Clapp's Favorite, Duchesse d'Angouleme, Louise Bonne de Jersey, Vicar of Winkfield. *Plums:* Wild Goose, Chickasaw, Sand. *Cherries:* Early Richmond, English Morello, Common Morello.

Failures in plantings have been rather heavier than usual, owing to the weak condition of trees used, and unfavorable conditions of weather at and following the time of planting.

Wood growth has been fair with all classes.

The present indications for a crop of fruit in 1880 are good, among all classes.

The quince has been sparingly tried, and some fruit was produced the past season.

Mulching has proved beneficial; also shade for the currant and gooseberry.

The following new varieties of small fruits have been planted: Strawberry—Cutter's Seedling, Monarch of the West; blackberry—Snyder; raspberry—Gregg, Turner.

New seedling fruits of Kansas origin: Peaches, promising early and late varieties.

A very little rust has been found on the blackberry leaves.

Nut-bearing trees cultivated: Black walnut, chestnut, hard-shelled almond.

Pruning the grape-vine and small fruits: Grape, cut back about one-half of the wood in November; blackberry and raspberry, head back the canes, in July, to three feet in length.

Miscellaneous fruits cultivated: Barberry, buffalo-berry, mulberry, pawpaw, persimmon, serviceberry. The dwarf serviceberry is very successful.

FORESTRY.

Varieties successfully cultivated in artificial forests, groves and belts: Ash, ailanthus, box elder, catalpa speciosa, cottonwood, white and red elm, hackberry, Kentucky coffee tree,* Lombardy poplar, honey locust, white maple, oak, white or gray willow.

Insects: Flat-headed borers work on the box elder and white maple, and the maple worm defoliates the maple trees.

ORNAMENTALS.

The following ornamentals have been successfully introduced: Evergreens—Red cedar, black Austrian, Scotch and white pine. Deciduous trees—Catalpa, sugar maple. Shrubs—Althea, barberry, forsythia, Indian arrow, lilac, Japan quince, privet, flowering almond, Missouri currant, spirea, snowball, syringa, red bud. Roses—Most of the hardy varieties. Hedges—privet, red cedar. Lawns—Kentucky blue-grass and white clover.

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*COMMONLY known as Coffee Bean.

A strong interest is manifest in adorning the home surroundings with lawns, trees and attractive flowering plants.

ATCHISON COUNTY.

BY THOS. F. COOK, MONROVIA.

FRUITS.

Apples: Orchards are in a fair condition at present date. *Peaches:* More interest is felt in the culture of this fruit than in former years. Budded varieties will be quite largely planted in the spring of 1880. *Pears:* Very few grown; are generally considered a failure. *Plums:* Same feeling prevails as with the pear. *Cherries:* Very few varieties succeed.

Apple, pear and cherry trees show no injury from the high temperature of the past autumn. The condition of peach and plum fruit buds is considered doubtful. A greater number of apple, peach and cherry trees were planted in 1879 than in any year previous.

Of apples, the larger proportion of varieties planted have been Ben Davis, Rawles Genet, Winesap, Maiden's Blush, Early Harvest, Jonathan, and quite a disposition to plant the Lawver.

A very small proportion of trees planted in 1879 have failed, which failures are attributed to the drouth during the latter part of the summer.

The wood-growth of 1879 has been an average of other years.

Present conditions indicate an abundant crop of fruit in 1880.

Quinces have not been thoroughly tried.

Mulch is beneficial to some varieties of small fruits. Currants should be shaded.

None of the new varieties of small fruits have been planted, to my knowledge. I do not know of any new seedling varieties of fruits of Kansas origin which are worthy of propagation.

Grape-vines suffered some from rust on the leaf the past season. It occurs when a drouth follows a vigorous growth. Know of no remedies being tried. The vines should be pruned lightly in February; heavy pruning weakens the vines.

Nut-bearing trees have been cultivated to some extent.

FORESTRY.

Varieties successful: Soft maple, cottonwood, walnut and white willow. The first three are generally used for forests, groves and belts. Black locust generally fails. Know of no insect injuring the varieties mentioned, excepting the soft maple, which is sometimes injured in leaf by the maple worm.

ORNAMENTALS.

European larch succeeds. American arbor vitæ succeeds for ornamental hedges.

Kentucky blue-grass and white clover succeed for lawn purposes.

There is a more general interest manifest in ornamentation.

BOURBON COUNTY.

BY J. D. MANLOVE, FORT SCOTT.

FRUITS.

All classes of fruit trees are in excellent condition, and none indicate any injury from climatic conditions of the past season, excepting a few pear trees which bloomed late in the fall. Apple, peach, plum and cherry trees were planted largely during 1879. The following varieties lead:

Apples: Summer—Early Harvest, Carolina Red June, Red Astrachan. Fall—Maiden's Blush, Lowell, Rambo, Rome Beauty. Winter—Winesap, Willow Twig, Rawles Genet, Ben Davis, Jonathan. Crabs—Transcendent, Hyslop, Soulard. *Peaches:* Crawford's Early, Hale's Early, Amsden's June, Crawford's Late, Foster. *Pears:* Bartlett, Louise Bonne de Jersey, Duchesse d'Angouleme, Flemish Beauty, Glout Morceau. *Plums:* Wild Goose and Chickasaw varieties. *Cherries:* May Duke, Gov. Wood, English Morello.

The wood growth of all classes was very fine in 1879.

The present indications are good for an abundant crop of fruit in 1880.

A few quince trees have been tried, and are satisfactorily productive.

Mulching of small fruits is important, to secure best results.

Turner's raspberry has been recently introduced, and succeeds. Of Kansas origin, some of the native blackcap raspberries have been successful under cultivation. Grapes should be pruned so as to leave about four or five feet of the canes, and the lateral growth pruned close. Blackberry and raspberry canes should be cut off at three-feet length. Gooseberry and currant bushes should be thinned.

Of nut-bearing trees, black walnuts and pecans have been placed under cultivation. Mulberry and persimmon have been cultivated with success.

FORESTRY.

Elm, hard maple, box elder, sycamore, cottonwood, catalpa and white ash are successful under cultivation. The walnut, cottonwood, catalpa and white willow have been successfully used in artificial forests, groves and belts. Soft maple fails, from attacks of worms.

Evergreens: Red cedar succeeds.

ORNAMENTALS.

The climate is too variable for moss roses; other classes mentioned in the circular succeed. Of the flowering shrubs, lilacs, altheas, spireas, honeysuckles, and most of the classes succeeding in the more northern States, succeed. Privet succeeds for ornamental hedges.

Kentucky blue-grass and white clover succeed for lawn purposes. Very many of the farmers manifest no desire for ornamentation of the house lots.

BROWN COUNTY.

BY P. W. FULLER, HIAWATHA.

FRUITS.

The present condition of apple and cherry trees is good; some blight on the Willow Twig. Peach—young trees good; old trees poor. Pear—bad, from blight. None were injured by the high temperature of the past autumn, excepting pear. All classes of fruit trees were largely planted in 1879—the following in greatest numbers:

Apples: Winesap, Rawles Genet, Jonathan, Ben Davis, Gilpin. *Peaches:* Hale's Early, Crawford's Early, Crawford's Late, Alexander, Old Mixon, Stump-the-World. *Cherries:* Early Richmond; very few of the trees failed.

The wood growth of 1879 was quite satisfactory with all classes.

The present indications for a crop in 1880 are: Apples, cherries, grapes, blackberries and raspberries very promising. The Lawton blackberry winter-kills; Snyder not thoroughly tried. Strawberry, very few cultivated; Monarch of the West tried and failed. Currant, does not succeed; are neglected. Gooseberry has not borne well for several years. Quince, not satisfactory.

FORESTRY.

Cottonwood, catalpa, black walnut, honey locust and Lombardy poplar have been used successfully for forests, groves and belts. Soft maple and black locust are a failure, from attacks of insects.

Evergreens: Norway spruce and red cedar are successful.

ORNAMENTALS.

Scotch and Austrian pines, red cedar, and varieties of fir, are successful. Most all varieties of hardy roses succeed where proper attention is given.

For lawns, Kentucky blue-grass succeeds. In some localities there is quite an interest felt in ornamentals.

BUTLER COUNTY.

BY WM. H. LITSON, BENTON.

FRUITS.

The present condition of all classes of orchard trees is *good.* No damage discovered resulting from the high temperature of the past autumn, excepting in some localities to the peach buds. A greater extent of orchard planting was made in 1879 than any year previous. Varieties largely planted:

Apples: Winesap, Ben Davis, Rawles Genet, Missouri Pippin, Maiden's Blush, Red Astrachan, Early Harvest, Carolina Red June. *Peaches:* Hale's Early, Amsden's June, Foster, Alexander, Crawford's Early. *Plums:* Miner, Wild Goose. *Cherries:* Early Richmond.

Failures in planting rather light, and were caused by unfavorable weather in spring of 1879.

Wood growth of all classes good.

Present indications for a crop of fruit in 1880 good for all classes.

The quince has been planted, and succeeds in growth; trees are too young to fruit.

Mulching of small fruits has been beneficial.

succeeds.

New varieties of small fruits introduced: Of the raspberry, only Turner.

New varieties of seedling fruit of Kansas origin: Peach—A very promising early variety.

Pruning of grape vines and small fruits: Grape vines, trim in February, and train to trellis; blackberry and raspberry canes, head back in summer, to produce branches; gooseberry and currant, head back, and thin out the growth in autumn.

Nut-bearing trees planted: Walnut, generally. The chestnut fails.

FORESTRY.

Varieties successfully introduced: Catalpa.

Varieties successfully cultivated in artificial forests, groves and belts: Cottonwood, walnut, box elder, Lombardy poplar, white willow, and ash.

Evergreens: Red cedar, best success; white, Scotch and black Austrian pine do well; and in some localities, the Irish juniper and Norway spruce.

Insects: Mulberry and box elder suffer from borers.

ORNAMENTALS.

The following have been successfully introduced: Trees—Weeping willows, weeping mountain ash. Shrubs—Lilacs, snowball, althea, flowering almond, Japan quince, forsythia, honeysuckles. Roses successful: Moss—Princess Adelaide, Hybrid China, Madam Plantier; Hybrid Perpetual—Madam Laffay, Giant of Battles, La Reine, Jules Margotten, Pius the IXth, Louis Odeir, La France; Climbing—Queen of the Prairie, Baltimore Belle, Multiflora. Hardy herbaceous plants: Peonies, Bleeding Heart, Iris. Lawns: Kentucky blue-grass succeeds for such purposes.

To some extent, ornamentation of home surroundings has been practiced.

ANDERSON COUNTY.

BY A. A. ADAMS, GARNETT.

FRUITS.

The present condition of orchards: Apple and cherry, fine; peach and plum, good; pear, poor. No injury is apparent resulting from the high temperature of the past autumn, excepting in the pear, which bloomed in November. Extent of orchard planting: Apple, an average of former years; peach, limited; pear, plum and cherry, light. Varieties planted largely:

Apples: Ben Davis, Missouri Pippin, Rawles Genet, Winesap, Lowell, Fall Pippin, Fall Wine. *Pears:* Bartlett, Duchesse d'Angouleme, Flemish Beauty. *Plums:* Wild Goose, Miner. *Cherries:* Early Richmond, English Morello, Reine Hortense.

Failures: Twenty-five per cent. of apple, and seventy-five per cent. of the pear. Cause of failures—Low vitality of trees, bad handling, and long distances of shipments.

The present condition indicates a fine crop of fruit in 1880 of all classes.

The quince has not been thoroughly tried. Where sheltered from winds, and in good soil, is promising.

Mulching of small fruits has proven an advantage in every case under observation.

Small fruits lately introduced: Strawberry—Charles Downing, Crescent Seedling.

Rust was quite severe on the leaves of the blackberry several years ago. Know of no cases since.

Pruning of the blackberry and raspberry: Head back the canes to four feet in summer, and the lateral growth during mild weather in winter.

Nut-bearing trees cultivated: A few chestnut and black walnut.

Buffalo-berry, barberry, mulberry, pawpaw, persimmon and serviceberry are all natives of this county, and are not cultivated.

FORESTRY.

Varieties successfully introduced: Ailanthus, catalpa, Lombardy poplar, golden willow.

Varieties successfully used for artificial forests, groves and belts: Green ash, box elder, cottonwood, white elm, hackberry, honey locust, Lombardy poplar, white and hard maple, Osage orange, black walnut.

Red cedar succeeds when transplanted.

Insects: Borers injure the elm and mountain ash.

ORNAMENTALS.

Ornamental trees successfully introduced: Ailanthus, catalpa, and golden willow.

Shrubs: Althea, acacia, Japan quince, lilac, spirea, syringa, weigelia.

Roses: All hardy classes succeed with a little care.

Herbaceous plants succeed.

Ornamental hedges: Red cedar succeeds, and is preferred.

Lawns: Kentucky blue-grass and white clover succeed for such purposes.

There is a strong love manifested by the people to beautify the home surroundings with lawns, trees, and a profusion of attractive flowers.

CHAUTAUQUA COUNTY.

BY A. ELLIS, ELK CITY.

FRUITS.

The present condition of all classes of fruit trees is most excellent. Do not discover any injury resulting from the high temperature of the past autumn. The planting of orchards in the spring of 1879 was very heavy. As most of the trees were furnished by tree-tramps, representing themselves as agents for some nursery, it would be useless to attempt to furnish a list of varieties.

Peaches: For early, the Amsden's June, Slater, and Steadly for late, have been largely planted. These were from home nurseries. About one-seventh of the number planted have failed; most of them by attacks of flat-headed apple-tree borers.

The wood growth was large.

The prospect at this date for a crop of fruit of all classes, in 1880, could not be more favorable.

Quince, so far as tried, fails.

Mulching is beneficial to small fruits, and especially so with the currant.

KANSAS SEEDLING FRUITS.

There are no seedling fruits of Kansas origin in this county, to my knowledge, excepting a peach, by Richard Slater of excellent quality, large, and fine size, five days earlier than Amsden's June; and another equally fine, by Ben. Holly, five days later. Grape-vines were affected with mildew on the leaves in 1878; causes, continued hot weather and humid atmosphere. *Prune grape-vines* close, leaving only three buds on each of previous year's shoots.

The mulberry, pawpaw, persimmon and serviceberry are found growing wild in this county, and have not been placed under cultivation.

FORESTRY.

Cottonwood, black walnut and soft maple have been successfully used for forests, groves and belts, and are most desirable. Red cedar is a native of this section, and easily transplanted.

ORNAMENTALS.

Red cedar, pines, hemlock, mountain ash, althea, spirea, flowering currant, flowering almond, Japan quince, and all classes of roses, succeed. Of herbaceous plants, bleeding heart, flower de luce, geraniums, chrysanthemums, and most varieties of hardy annuals, succeed. For ornamental hedges, privet and pyricanth are successful.

For lawns, Kentucky blue-grass and white clover are the most suitable, and are at home in this county.

CHEROKEE COUNTY.

BY THOS. W. SMITH, BAXTER SPRINGS.

FRUITS.

The present condition of orchards of all classes, good. Injury resulting from the high temperature of the past autumn: Apples, none apparent; peach, pear, plum and cherry, a portion of the fruit buds are killed, but a plenty are alive to produce a good crop. Extent of orchard planting: Apple, large; peach, small; pear, large; plum and cherry, large. Varieties planted largely:

Apples: Early Harvest, Carolina Red June, Ben Davis, Rawles Genet. *Peaches:* Hale's Early. *Pears:* Bartlett. *Plums:* Wild Goose. *Cherries:* Early Richmond.

Failures in planting: Apple, 5 per cent. Peach, from home nurseries, 10 per cent.; from Eastern nurseries, 90 per cent. Pear, from home nurseries, 5 per cent.; from Eastern nurseries, 25 per cent. Plum, from home nurseries, 5 per cent.; from Eastern nurseries, 20 per cent. Cherry, from home nurseries, 5 per cent.; from Eastern nurseries, 20 per cent.

Causes of failures: Poor condition of trees shipped in, together with an unfavorable condition of weather at the time of planting, which the weakened condition of trees could not endure.

Wood growth, of all classes, was small.

The present indications for a crop of fruit in 1880, of all classes, good, excepting strawberry and currant.

The quince tree, upon my grounds, grows well, and is productive, bearing fine fruit.

Mulching of small fruits has been beneficial.

New seedling fruits of Kansas origin: Peach—A very early freestone, and a promising clingstone.

Pruning of the grape: Remove about one-half of the previous year's growth, in autumn. Blackberry and raspberry—Remove about the same proportion of wood, in autumn. Gooseberry—Train to a tree form.

Nut-bearing trees cultivated: A few chestnut, pecan, and black walnut.

Mulberry, pawpaw, persimmon and serviceberry are cultivated.

FORESTRY.

Varieties successfully introduced: Box elder, cottonwood, elms, sugar and white maple, and black walnut.

Varieties successfully cultivated in artificial forests, groves and belts: Cottonwood, white maple, and black walnut.

Red cedar and other evergreens have not been very successfully planted.

Insects: Maple, in years past, was troubled with a borer.

ORNAMENTALS.

Most of the hardy classes of trees and shrubs succeed.

Ornamental hedges: The arbor vitæ and privet.

Lawns: Kentucky blue-grass succeeds; white clover burns out during the heat of summer. There is quite an interest manifested in ornamentation of the home surroundings.

CLAY COUNTY.

BY E. S. BEEGLE, CLAY CENTER.

FRUITS.

The present condition of orchards is very good, with the exception of such as were planted prior to the grasshopper incursion of 1874, which gave them a stunted condition from which they do not recover. Some of the twigs of apple trees indicate damage from climatic causes of the past autumn. A late growth occurred, which did not fully mature. Quite an extent of planting was made in the spring of 1879, principally of apple trees.

The wood growth of all classes was not as heavy as in 1878.

The present indications for a crop of fruit in 1880 are: Apples, good; peaches, heavy; plums, good; cherries, medium; grapes and blackberries, fair; gooseberries and raspberries, good.

Quinces have been tried; results not satisfactory.

Small fruits are benefited by some kind of protection.

No new varieties of small fruits have been introduced. The old varieties, such as Wilson's Albany strawberry, Kittatinny blackberry, and Miami and Doolittle raspberry, give general satisfaction.

There are no Kansas seedling fruits, to my knowledge, except peaches, some of which are very promising.

Of the native varieties of fruit, the mulberry has been successfully cultivated.

FORESTRY.

Cottonwood, box elder, walnut, elm and soft maple have been planted for forests, groves and belts, successfully.

Evergreens: Red cedar succeeds under cultivation.

Insects: A large borer is destroying the cottonwood trees on the uplands.

ORNAMENTALS.

Catalpa, Norway spruce, firs and some of the pines, when mulched and properly taken care of, promise success.

Kentucky blue-grass succeeds for lawn purposes.

There is a strong desire with many of the people to beautify their homes as fast as circumstances permit.

CLOUD COUNTY.

BY C. H. SHEFFIELD, GLASCO.

FRUITS.

The present condition of orchards is as follows: Apples and peaches, remarkably good; pears, fair; plums, good; cherries, excellent.

No injury discovered from the high temperature of the past autumn.

About one-fourth of all the apple orchards in this county were planted in the spring of 1879; peaches, great many; cherries, 2,000 to 3,000; pears and plums, rather limited in numbers. The following varieties were planted:

Apples: Ben Davis, Jonathan, Missouri Pippin and Winesap were most largely planted. *Peaches:* Mostly seedlings. *Pears:* Bartlett, Flemish Beauty. *Plums:* Wild Goose, Miner. *Cherries:* Principally Early Richmond.

Failures: Apples, peaches, cherries, about 5 per cent. each; pears, 10 per cent.; plums, 3 per cent. Causes—Weak condition of trees, occasioned by the low temperature of the winter of 1878 and 1879, and drouth during the early part of the season of 1879.

The wood growth of apple, remarkably good; peach and cherry, fair; pear and plum, good.

The present indications for a crop of fruit in 1880, are: Apples, best since trees were planted; peaches, pears, plums, very good; cherries, fair; grapes, strawberries, blackberries, currants, gooseberries, raspberries, good.

Quinces have not been tried sufficiently to report.

Mulching small fruits in every instance has resulted in a decided benefit.

New varieties of small fruits: Strawberries—Crescent seedling and Sharpless have fully sustained the recommendations given. Blackberries—Snyder, good. Gooseberries—Downing's and Smith's Improved are good varieties.

Pruning vines and small fruits: Grapes, cut away one-third to one-half of last year's wood, which should be done before the middle of February of each year. Blackberries, remove all old wood, and cut back the current year's growth in December. Gooseberries, trim to a tree form. Currants, prune in November and December. Raspberries, remove all old wood in fall, and cut back young wood.

Nut-bearing trees: Walnuts have been successfully cultivated.

The mulberry, persimmon and serviceberry are cultivated in this county.

FORESTRY.

Cottonwood, box elder, elms, walnuts, ash and hackberry have been successfully grown for forests, groves and belts.

Evergreens: Red cedar and all the common classes have been successfully planted.

Insects: There is a borer destroying the ash trees.

ORNAMENTALS.

Mountain ash, evergreens, and the shrubs forsythia, hydrangea, lilacs, snowball, Japan quince, wistarias and honeysuckles have been successfully planted. Roses—Some of the moss, damask, hybrid perpetual and climbers succeed.

Ornamental hedges: Privet and arbor vitæ succeed.

Lawns: Kentucky blue-grass and white clover succeed for such purposes. There is a decided disposition to ornament home surroundings.

COFFEY COUNTY.

BY C. H. GRAHAM, LEROY.

FRUITS.

The present condition of orchards: Apples and plums, good; peaches, poor; pears and cherries, fair. No injury has been discovered, resulting from the high temperature of the past autumn, among any of the classes of fruit trees excepting the apple, the injury to which was very light. The extent of orchard planting in 1879 was an average of other years. Varieties planted largely:

Apples: Winesap, Ben Davis, Missouri Pippin, Grimes's Golden, Rawles Genet. Of the other classes, mainly the common varieties. Failures, about ten per cent. of all classes; cause, unfavorable weather at the time of planting.

Wood growth, fair among all classes.

The present indications for a crop of fruit in 1880 are good for all classes excepting the peach.

Quince, where tried, succeeds about as well as other fruits.

Mulching has been successfully used for small fruits.

Rust: The blackberry suffered the past year with rust on the leaves. It was during dry, hot weather.

Nut-bearing trees cultivated: Black walnut.

FORESTRY.

Varieties successfully cultivated: Box elder, cottonwood, maple, and walnut. Red cedar has been successfully planted.

ORNAMENTALS.

For hedges, the Osage orange only has been used.

For lawns, the Kentucky blue-grass and white clover succeed.

COWLEY COUNTY.

BY J. VAN DOREN, WINFIELD.

FRUITS.

The present condition of orchards of all classes of trees, good. No injury is apparent, occurring from the high temperature of the past autumn. Extent of orchard planting in 1879 much larger, of all classes, than in any previous year. Varieties planted largely:

Apples: Red Astrachan, Early Harvest, Carolina Red June, Lowell, Maiden's Blush, Winesap, Ben Davis, White Winter Pearmain, Rawles Genet, Rome Beauty, Grimes Golden, Missouri Pippin, Limber Twig. *Peaches:* Amsden's June, Early Rivers, Hale's Early, Early York, Stump-the-World. *Pears:* Flemish Beauty, Duchesse d'Angouleme, Clapp's Favorite, Osband's Summer. *Plums:* Wild Goose, Lombard. *Cherries:* Early Richmond, English Morello, Lieb, Late Richmond, Governor Wood.

The failures of plantings were very light in 1879; causes, dry season and neglect of cultivation.

Wood growth of 1879, full an average of other seasons among all classes.

The present indications for a crop of fruit in 1880, age of trees and plants considered—Apples and pears, favorable; peaches, heavy; plums, native varieties, good; cherries, Early Richmond, good; grapes, Concord, good; strawberries, blackberries, gooseberries, raspberries, good; currants, where shaded, fair.

The quince, growth thrifty; too young to fruit.

Mulching of small fruits beneficial.

New seedling varieties, Kansas origin: Peach, very fine and early varieties. Pruning grape-vines and small fruits: Grape-vines, trim short, from November to February; blackberry, cut out old canes soon after crop is picked, and head back the new canes to within three or four feet of the ground.

Nut-bearing trees cultivated, black walnut and a few sweet-chestnut trees. The mulberry, persimmon, barberry and serviceberry are to some extent cultivated.

FORESTRY.

Varieties successfully introduced: Cottonwood, soft maple, box elder, catalpa, sycamore, elm, Osage orange. Varieties successfully cultivated in artificial forests, groves and belts: Cottonwood, soft maple, black walnut.

Evergreens: Successfully planted—Red cedar, Scotch, black Austrian and white pine, Norway spruce and arbor vitæ.

Insects: Borers are injuring the soft maple, cottonwood and box elder.

ORNAMENTALS.

Trees successfully introduced: Catalpa, Lombardy poplar, soft maple. Shrubs: Spireas, snowball, flowering almond, weigelia, syringa, deutzia, althea, fringe tree. Roses of all hardy classes are a success.

Lawns: Kentucky blue-grass and white clover succeed admirably. Generally, there is manifest a very strong love among the people for beautifying the home surroundings.

CRAWFORD COUNTY.

BY THOS. PING, GIRARD.

FRUITS.

The present condition of all classes of fruit trees is most excellent. No injury has been discovered arising from the extreme high temperature of the past autumn, excepting on neglected grounds, where sun-scald occurred, followed by borers.

The extent of orchard planting in the spring of 1879 was about as follows: Apple and peach, 20 per cent. of the total number of trees in the county; pear, 10 per cent.; plum, 5 per cent.; cherry, 20 per cent.

Peaches: Mostly the Crawford's, Hale's Early, Amsden's June, Heath Cling. *Pears:* Bartlett, Duchesse d'Angouleme. *Plums:* Wild Goose, Green Gage, Washington, Damson. *Cherries:* English Morello, May Duke, and an excellent white variety superior to all others.

Wood growth of 1879: Apple, peach, pear and plum very good; cherry, the finest for many years.

The present indications for a crop of fruit in 1880 of all classes very promising, excepting raspberries, the canes of which are somewhat injured.

Quinces have not been fully tried. Such trees as are old enough, have borne fine fruit.

Mulch and shade small fruits. Currants are very much benefited by such treatment.

Pruning the grape and small fruits: Any time from fall of the leaves until March 1st, leaving a couple of canes, which train to stakes well up from the ground; blackberries, clip the canes to three feet high; gooseberries, thin out to three shoots; currants, to four or five shoots.

Nut-bearing trees: The black walnut has been placed under cultivation. Grows finely from seed.

The mulberry fails.

FORESTRY.

Cottonwood, box elder, black walnut, elms, catalpa, soft and hard maple and hackberry have been successfully cultivated, and for artificial forests, groves and belts the soft maple, catalpa, cottonwood, black walnut, white elm, Lombardy poplar, hackberry and box elder are well adapted.

Red cedar succeeds wherever properly planted.

Insects: The gray ash is ruined by borers, and the soft maple defoliated by the maple worm.

ORNAMENTALS.

Trees: Catalpa, box elder, red cedar, white Austrian and Norway and Scotch pines and balsam fir all succeed. Shrubs: Altheas, flowering almond, lilacs, spireas, smoke tree, tamarix and climbing honeysuckles succeed, and are splendid.

Most of the hardy classes of roses have been planted successfully.

Herbaceous plants: Peonies, phloxes, tiger lily and bleeding heart have been planted, and succeed.

Ornamental hedges: The native rose is well adapted.

Lawns: Kentucky blue-grass and white clover are well adapted to such purposes. This county excels in ornamentation of home surroundings, its beautiful lawns, trees and flowering plants.

DAVIS COUNTY.

BY WILLIAM CUTTER, JUNCTION CITY.

FRUITS.

The present condition of apple trees is good. The old trees have recovered from the effects of the year 1874. Peach: Young trees are in fine condition. There are but few sound trees among those planted prior to 1874. Pear: Dwarf trees planted on a clay subsoil, and standards on a sandy soil, are looking fine. Plum: Trees make fine growth, and only the curculio renders them unprofitable. Cherry: Trees of the Early Richmond and Morello varieties are thrifty; the sweet varieties are dead.

The extent of apple orchard planting in 1879 was double that of any year prior; peach, pear and plum an average; cherry, more than usual. The varieties most largely planted:

Apples: Ben Davis, Winesap, Rawles Genet, Missouri Pippin, Jonathan, Willow Twig, Smith's Cider, Maiden's Blush, Lowell, Rambo, Fameuse, Early Harvest, Carolina Red June, Red Astrachan, Cooper's Early White. *Peaches:* Alexander, Amsden's June, Heath Cling, Old Mixon Free, and many seedlings. *Pears*: Flemish Beauty, Clapp's Favorite, Bartlett. *Plums:* Emigrant, Miner, Wild Goose. *Cherries:* Early Richmond, Common Morello.

Failures in planting: Apples and cherries, 10 per cent.; peaches and plums, 6 per cent.; pears, 4 per cent. Causes—Shipped stock, and careless planting.

Wood growth in 1879: Apple, large on young and hardly an average on old trees; peach, average; pear, good; plum and cherry, an average.

The present indications for a crop in 1880: Apples, never better; peaches, one-third of the fruit buds are dead; plums and cherries, good; pears, extra; grapes, blackberries, currants, gooseberries, good; strawberries, poor; raspberries, canes some damaged.

Quince trees grow very well; are not productive.

Mulching and shading of small fruits has been beneficial. But will it pay expenses?

New seedling fruits of Kansas origin: There are some very promising peaches, all earlier than the Hale's Early, and fine in quality.

Rust appeared on the leaves of the Clinton grape.

Pruning: Grapes, sparingly; blackberry and raspberry canes should be headed back in June; keep the gooseberry and currant free from suckers.

Nut-bearing trees: None but the black walnut has been planted and cultivated. Barberries succeed.

FORESTRY.

No varieties are preferable to the native trees. Walnut, elms, oaks and maples have been successfully planted for forests, groves and belts.

Evergreens: Red cedar is a complete success, and black Austrian pine is worthy of planting.

The black locust, tulip tree, European larch and Lombardy poplar have failed.

Insects: Borers destroy the black locust, and sometimes attack the box elder, elm and ash.

ORNAMENTALS.

Some varieties of the hardy classes of roses succeed.

Kentucky blue-grass is well adapted for lawn purposes.

DICKINSON COUNTY.

BY J. W. ROBSON, CHEEVER.

FRUITS.

The present condition of apple orchards is very satisfactory; of peach, the best; of pear, plum and cherry, good. No injury has been discovered in any of the trees, excepting that of the fruit buds of the peach, perhaps one in fifty may be killed. A larger number of the different classes were planted in 1879 than in any previous year. The varieties planted largely are:

Apples: Winesap, Ben Davis, Missouri Pippin, Rawles Genet, Fink, Gilpin, Willow Twig, Jonathan, Grimes's Golden, Dominie, Maiden's Blush, Lowell, Fameuse, Rambo, Gramar's Pearmain, Cooper's Early White, Early Harvest, Red Astrachan. *Peaches:* Alexander, Hale's Early, Amsden's June, Crawford's Early, Troth's Early, Heath Cling. *Pears:* Mostly Flemish Beauty, Clapp's Favorite. *Plums:* Weaver, Miner, Lombard. *Cherries:* Early Richmond, common Morello.

Failure of trees: Apples, two-thirds; peaches and pears, one-fourth; plums and cherries, very few. Causes — Many of the apple trees were dead when planted, and the dry spring caused the death of others.

The wood growth in 1879 of all classes was good, excepting the cherry, which was poor.

The present indications for a crop of all classes of fruit in 1880 are good.

Mulching has been of great value, when spread over the entire surface of the ground to the depth of four to six inches.

New varieties of small fruits: Blackberry — The Snyder is favorably spoken of in different parts of the county. Strawberry — Crescent seedling, Capt. Jack and Sharpless are promising. Raspberry — Gregg and Turner are a success.

New seedling fruits of Kansas origin: Peaches — Several promising early varieties. Blackberry — A very promising native variety.

Pruning vines and small fruits: Grape — Treated on the renewal system. Blackberry and raspberry — Cut out all old canes as soon as the fruit is picked. Top the young canes at about three feet from the ground, and the lateral growth following in July. Gooseberry — Cut out the old wood, and shorten-in the young shoots.

Nut-bearing trees: The black walnut is the only sort yet placed under cultivation. Red mulberry has been successfully cultivated.

FORESTRY.

Red and white elms, green and white ash, box elder, soft maple, cottonwood, black walnut and hackberry have been successfully planted for forests, groves and belts.

Evergreens: Red cedar, Scotch and Austrian and mountain pines succeed.

Varieties of forest trees which have failed: Horse chestnut, tulip tree, white and yellow birch, alder, hard maple, cucumber tree, American chestnut and oaks. It is difficult to succeed with forest trees that have a glossy, thin foliage.

Insects: Borers destroy the cottonwood on the uplands.

ORNAMENTALS.

Weeping, Wisconsin and Kilmarnock willows succeed in the towns.

List of roses which succeed: Moss — Glory of Mosses, Princess Adelaide, Luxembourg. Provence — Common Cabbage. Damask — Common Damask. Hybrid China — George IV, Aurora. Hybrid Perpetual (autumnal bloomers)—Baron Prevost, Gen. Jaquiminot, Wm. Jesse, Madam Laffay. Climbers—Queen of the Prairie, Baltimore Belle, Greville.

Lawns: Kentucky blue-grass and white clover make a good sward for such purposes.

The desire for ornamentals, lawns, shade trees and beds of attractive flowers is increasing.

DONIPHAN COUNTY.

BY S. HATCH, WATHENA.

FRUITS.

The condition of orchards at the present date: Apple trees were badly punctured by the seventeen-year cicada (locust), which caused the formation of a large amount of fruit buds. Do not think the injury from such punctures permanent or serious. Pear and cherry, good condition; peach and plum, rather poor. No injury is apparent, resulting from the high temperature of the past autumn. The extent of orchard planting was quite small, as compared with former years. Varieties largely planted:

Apples: Ben Davis, Missouri Pippin, Winesap, Rawles Genet. All classes planted were a success, excepting those near timber lots, which were injured by the seventeen-year cicada.

Wood growth: Apple, pear, plum, cherry, good; peach, young trees, good; old trees, poor.

The present indications for a crop of fruit in 1880: Apples and pears, excellent; peaches, the fruit buds were injured to some extent by the cold weather of early winter; plums, fair; all other classes, good.

Quince culture has not resulted favorably.

Mulching is beneficial to small fruits, and most kinds do better when partially shaded.

The newer varieties of small fruits planted: Strawberry—Crescent Seedling, Captain Jack. Blackberry—Snyder. Raspberry—Turner and Thwack. None have yet fruited.

New seedling fruit of Kansas origin: Apple, two or three promising varieties; peach, a number of valuable varieties, none of which are very early in ripening.

Rust: Only on grapes, such as the Isabella, Catawba, and Delaware. It occurs in hot, humid weather. Remedy: Dust the leaves with flour of sulphur.

Pruning adopted with the grape is the spur and renewal system, and should be done in March; blackberry and raspberry, pinch back the growing canes in summer, and cut the laterals in spring to ten or fifteen inches in length.

Nut-bearing trees cultivated: Chestnut and black walnut; a few of the former have commenced bearing.

FORESTRY.

This county is naturally well provided with forest trees, therefore but very few artificial groves have been planted. For such purposes, the cottonwood, white maple, black walnut and willow have been successfully used.

Evergreens: The red cedar, Norway spruce, white pine, balsam fir, arbor vitæ and hemlock succeed.

ORNAMENTALS.

The following have been successfully introduced: Mountain ash, catalpa, weeping willow, snowdrop, flowering almond, snowball, weigelia rosea, golden bell, spirea, calacanthus, hydrangea, flowering currant, acacia, and Japan quince. Most all classes of hardy roses and herbaceous flowering plants succeed.

Ornamental hedges: The privet and sweet brier succeed.

Lawns: Kentucky blue-grass and white clover succeed. There is a general disposition to adorn the home surroundings with lawns, trees and flowering plants.

DOUGLAS COUNTY.

BY S. W. PEARSON, LAWRENCE.

FRUITS.

The present condition of orchards: Apple, fair; peach, pear and cherry, good. Do not discover any injury resulting from the high temperature of the past autumn deserving of note. Extent of orchard planting, an average of other years, excepting of apples, which were in excess. Varieties planted largely:

Apples: Ben Davis, Missouri Pippin, Winesap, Rawles Genet, Grimes's Golden, Willow Twig, Gilpin, Wine, Maiden's Blush, Jonathan, Rambo, Cooper's Early White, Carolina Red June, Early Harvest, Lowell, Red Astrachan. *Peaches:* Amsden's June, Alexander, Old Mixon, Heath Cling, Crawford's Early. *Pears:* Bartlett, Flemish Beauty, White Doyenne, Seckel, Duchesse d'Angouleme. *Plums:* Wild Goose. *Cherries:* Early Richmond, English Morello.

Failures in planting have been heavier than usual. Cause, weakened condition of trees.

Wood growth: Apple, plum and cherry, fair; peach and pear, light.

The present indications for a crop of fruit in 1880: Apples and blackberries, fair; cherries, grapes, strawberries and raspberries, good; peaches and pears, light.

Mulching of small fruits has proven beneficial.

Pruning of the grape-vine should be done in February. Cut back the bearing wood to short spurs, and train main canes to trellis. Blackberries and raspberries: Clip the canes in summer as soon as they have attained the height of three and a half feet, and cut the lateral growth to within six inches of main cane, in March.

Quince succeeds in special localities.

New seedling fruits of Kansas origin worthy of propagation: Apples and peaches, several valuable varieties.

Rust has been found mostly on grape leaves.

The barberry, mulberry and serviceberry have been cultivated in this county.

FORESTRY.

Varieties successfully cultivated in artificial groves and belts: Ash, box elder, cottonwood, white and red elm, hackberry, white maple, black walnut, and willow. The red cedar, black Austrian, Scotch and white pine, and Norway spruce have been successfully planted.

Insects: Maple worm defoliates the maple trees; borers, the cottonwood, maple, box elder, ash, and elm; and a species of aphis injures the foliage of elms.

ORNAMENTALS.

Ailanthus, catalpa, Lombardy poplar, and silver-leafed poplar. Roses of all hardy classes succeed. Herbaceous plants, hardy sorts: Peonies, bleeding heart, phloxes, lily of the valley, iris, and callirrhoe.

Ornamental hedges: Laurel-leafed willow, privet, Japan quince, and red cedar.

Lawns: Kentucky blue-grass and white clover succeed for such purposes.

There is a strong love manifested for beautiful home surroundings among all classes, both in the city and rural districts, probably to as great if not greater extent than in any other part of the State.

ELK COUNTY.

BY HENRY WELTY, ELK FALLS.

FRUITS.

Present condition of orchards of all classes of fruit is fine, excepting old peach trees. No injury perceptible occurring from the high temperature of the past autumn.

The extent of orchard planting in 1879 was large of all classes of fruit, excepting pear and cherry.

Failures were as follows: Apple, peach and cherry, about one-fourth each; pear, one-tenth; plum, one-twentieth. Causes of failure—Weak condition of trees and bad weather at time set, and following, and general neglect.

Wood growth of 1879 fine with all classes, when properly cultivated.

The present indications for a crop of fruit in 1880 are very fine for all classes, excepting plums and cherries, which are only good. Cannot report on the currant.

The quince has been tried. Some fruit has been grown.

Mulching is beneficial to the strawberry and gooseberry, but not with any of the other small fruits.

The common method of summer clipping of the blackberry and raspberry canes and lateral growth is most successful mode of pruning.

Of nut-bearing trees, the black walnut is the only kind cultivated.

FORESTRY.

Varieties successfully introduced: Black walnut, soft maple, elm, box elder, Lombardy poplar, red cedar, cottonwood, catalpa, white ash. Varieties successfully cultivated in artificial forests, groves and belts: Black walnut, soft maple, box elder, cottonwood, Lombardy poplar, catalpa.

Evergreens: Red cedar is a complete success. White and Austrian pine in most instances succeed.

Insects: The native elms were defoliated in August by a small brown worm, about three-fourths of an inch long. It also worked some on the white ash.

ORNAMENTALS.

Varieties successfully introduced: Red cedar, catalpa, balm of Gilead, English prim and black Austrian pine. Roses: Many of the classes succeed. Of the moss, the Glory of Mosses; hybrid China, the Madam Plantier; hybrid perpetual, the Giant of Battles, Madam Chas. Wood; climbing, the Queen of the Prairie and Seven Sisters, are most desirable.

Kentucky blue-grass and white clover are very successful for lawn purposes.

ELLIS COUNTY.

BY MARTIN ALLEN, HAYS CITY.

FRUITS.

The present condition of orchards: Apple, trees young, good; peach, pear, plum, cherry, fair. Cannot discover any injury arising from the high temperature of the past autumn.

Quite a large number of fruit trees were planted in the spring of 1879. In the selection of varieties most planters were governed to some extent by the recommended fruit list of the State Horticultural Society; others bought of agents, who were working off refuse stock from distant nurseries, and got the poorest class of trees. The Ben Davis apple leads. In some cases the entire planting failed, and others were successful even during the drouth of the past few years. Some failures resulted from carelessness in preparation of the ground and planting, and a lack of knowledge of the best methods.

Wood growth of 1879 is as follows: Apple, peach, pear and cherry, fair; plum, moderate.

Present indications for a crop of fruit in 1880: Apples, plums, cherries, grapes and gooseberries, good; raspberries and strawberries, poor; peaches, fruit buds nearly all killed at this date; pears, trees too young to fruit; blackberries and currants, none to fruit. Native fruits: Wild plums; superior to the Wild Goose.

Treatment of grape vines: Cut off all the canes but one or two, and clip them at 3 to 6 feet high, according to the height of the vine. Lay these canes on the ground to the north, and cover with hay or straw during the winter. In the spring take them from under the covering, and place brush on top of the winter protection, and train the canes on the brush.

The barberry, mulberry and a dwarf variety of serviceberry have been successfully planted. The last-named only has fruited. It stands the late spring frosts; is quite ornamental in early spring, and again when the fruit ripens, which has never failed.

FORESTRY.

Osage orange, honey locust, soft maple and the Virginia wild cherry have been introduced, and are quite promising. For forests, groves and belts, the cottonwood, box elder, green ash, white and red elm, black walnut and honey locust are the most suitable varieties. The hard maple, white and golden willow, larches, firs, spruces and tulip tree fail in this locality.

Evergreens: The red cedar is a native of this county, but has not been successfully transplanted. There can be no doubt as to the success of nursery-grown trees.

ORNAMENTALS.

Honey locust, sycamore, catalpa, butternut, soft maple, Lombardy and silver-leafed poplar, red bud, strawberry tree, California privet and barberry have been successfully introduced. All classes of roses promise success.

Ornamental hedges: I would recommend red cedar, barberry, Japan quince and California privet for such use.

Some disposition is manifested in adorning home surroundings.

ELLSWORTH COUNTY.

BY W. E. FOSNOT, ELLSWORTH.

FRUITS.

The present condition of orchards: Apple, fine, where proper attention is given; peach, plum and cherry, very fine; pear, rather poor. The only injury resulting from the high temperature of the past autumn was, that it checked the growth of apple trees materially, and induced attacks of borers. Varieties mostly planted:

Apples: Such as are recommended in the voted fruit list of this Society. *Peaches:* Largely seedlings. *Cherries:* Common Morello and Early Richmond.

Failures are attributable to the folly of buying trees from nurseries at a distance, requiring long time in shipping, and neglect and ignorance in management after planting.

The wood growth of 1879: Apple, medium; peach, plum, cherry, good; pear, generally short.

The present indications for a crop of fruit in 1880: Apples, trees too young to fruit; peaches, three-fourths of a crop; pears, none; plums, light. Of all other classes a full crop.

Quince trees grow finely when mulched. Not of age to fruit.

Have found mulching beneficial to small fruits. Cannot report on new varieties of small fruits. Of the old varieties—blackberry, Kittatinny, Wilson's and Snyder; currants, all kinds, when thoroughly mulched; pale red and Houghton gooseberry, and Doolittle and McCormick raspberry, succeed.

Pruning of small fruits: Blackberry and raspberry canes should be clipped when the new growth has reached eighteen inches high, and the lateral at a point one foot from the cane.

No nut-bearing trees are cultivated except the black walnut.

FORESTRY.

Catalpa, white elm and maples have been successfully introduced. For forests, groves and belts, the box elder, cottonwood, walnuts, Lombardy poplar, honey locust, silver-leafed poplar and soft maple have been successfully planted. The white birch fails with me.

Evergreens: Red cedar, black Austrian and Scotch pines and arbor vitæ have succeeded.

ORNAMENTALS.

The shrubs succeeding are—lilacs, snowball and syringa; upright honeysuckles succeed here. All varieties of roses successful in this latitude east of this locality.

There is quite a desire manifested to surround the home with lawns, trees and flowering plants.

FORD COUNTY.

BY JAS. NICOLL, SPEAREVILLE.

FRUITS.

The condition of orchards at present date: Apple trees are suffering from the effects of climatic extremes of the past year, as well as the other classes of trees.

A very few trees were planted in the spring of 1879. Of my own planting, the failures were as follows: Apples, one-half; peaches, one-tenth; pears, three-quarters; cherries, one-eighth. There are but very few bearing trees of any kind at this date.

FORESTRY.

For forests, groves and belts the cottonwood, elm, hackberry, black walnut and honey locust have been successfully cultivated.

Insects: The ash has suffered from a borer.

From the newness of this county, and a corresponding limit to experiences in horticultural pursuits, this report is from necessity very brief.

FRANKLIN COUNTY.

BY H. P. WELSH, OTTAWA.

FRUITS.

The present condition of orchards: Apple, good; peach, a large portion were killed in 1878 and 1879. All the other classes are in good condition.

Do not discover any injurious results occurring from the high temperature of the past autumn.

The extent of orchard planting in 1879 was very extensive of all classes of fruits. The varieties selected were such as are recommended by the State Horticultural Society in its reports for 1877 and 1878.

The present indications for a crop of fruit in 1880 are good for all classes, excepting the peach.

Mulching of small fruits has been beneficial. Shading is not required with any except the currant.

New varieties of small fruit: Strawberry—Crescent Seedling and Sharpless are promising varieties. The Snyder blackberry and Turner raspberry have been successful.

Nut-bearing trees: Walnut and pecan have been cultivated in this county.

For artificial forests, groves and belts, the walnut and elm have been successfully planted.

As an evergreen, the red cedar succeeds.

All classes of roses are a success.

Kentucky blue-grass and white clover succeed for lawns.

There is a desire manifest among the people to ornament with lawns, trees and flowering plants the home surroundings.

GRAHAM COUNTY.

BY R. A. RICHMOND, STAR; PHINEAS TEMPEST, WHITFIELD.

Mr. Richmond says:

From the fact that this county was not until very recently settled, any report upon its horticultural status at this date must be very brief.

But very few apple and peach trees have been planted; and in forestry, the work has been correspondingly light—there being only a few cottonwood trees planted. The settlers are begining to manifest more interest in this branch of industry, and as fast as circumstances will permit, and a proper knowledge of what and how to plant is acquired, undoubtedly the interest will be developed.

Mr. Tempest says:

This county is new in every sense of the word. There is not even a small orchard set, that I am aware of. The oldest settlers date back but six to eight years, and they have followed the pursuit of stock-raising. The impression was general among that class of people that fruit will not grow in this locality, while the farmer proper thinks many kinds will do well. There will be quite a number of small orchards set in the spring of 1880.

Peach pits planted came up, and the trees grew two or three feet in a single season. The following winter they killed to the ground; started the next spring, and made a fine growth, and at this date, February 10th, 1880, those, as well as others grown from seed planted in the spring of 1879, are in excellent condition.

The cottonwood, box elder, Osage orange, soft maple and catalpa have been successfully grown in small groves. Red cedar has been successfully planted. C. Deshon, of Whitfield, has forty acres planted to forest trees. H. M. Wisdom is also engaged in forest-tree culture.

GREENWOOD COUNTY.

BY ISAAC DETHERIDGE, FAME.

FRUITS.

The present condition of orchards of all classes is fine, excepting pears, which are variable. The high temperature of the past autumn caused no injury, excepting to the immature, late growth on peach trees.

Extent of orchard planting: Apple trees, 2,100; peach trees, 2,000; pear trees, 300; plum trees, over 300; cherry, at least 750.

Varieties planted: The recommendations of the State Horticultural Society, in volumes VII and VIII, govern generally, and many respectable nurserymen are confining their propagation of varieties to the "Voted Fruit List" of the Society. Failures in planting were unusually heavy — caused principally by unfavorable weather at the time and following planting.

Wood growth: Of apple trees, fair; peach, heavy on young, but rather light on old trees; pear and plum, good; cherry, fair. Trees in high, dry, gravelly, and loose, stony land, without any cultivation, made double the growth of those on dark, rich soil, well manured and cultivated.

Present indications for a crop of fruit in 1880, age considered: Apples, very good; peaches, heavy; plums, cherries, grapes and blackberries, good; pears, less than an average; strawberries, light; gooseberries, leafed out in January, and are now (February 10th) damaged.

Quince, where planted, grow well.

Mulching gooseberry and strawberry plants has proved quite favorable.

New varieties of small fruits (to this county) planted: Kentucky and Great American strawberry.

Turner raspberry reported a success.

Rust has appeared (very light) on grape-vines.

Pruning of grape-vines and small fruits: Grape-vines, train to arms and trim the laterals to four or five buds, in mild weather in winter; blackberry canes, head back in summer, and remove old canes in winter; gooseberry, remove all old unproductive wood in autumn or winter; raspberry, remove dead canes in early spring, reduce canes on strong plants to six in number, and head back to about four feet high.

Nut-bearing trees cultivated: Chestnut, there are about 1,000 trees in this county, doing finely; black walnut trees have been planted largely.

Mulberry, barberry, and serviceberry have been planted. The last failed.

FORESTRY.

Varieties successfully introduced: Cottonwood, walnut, poplar, box elder; maple, rather unsatisfactory.

Varieties successfully used for artificial forests, groves and belts: All of the foregoing varieties — cottonwood most reliable, and a fast grower. In some localities seedling peach trees have been planted for shelters.

Evergreens: The red cedar succeeds.

Insects: Borers attack the maple, and caterpillars destroy its foliage and that of the poplar.

Lawns: Kentucky blue-grass and white clover have succeeded in a few cases.

HARVEY COUNTY.

BY M. HALL, NEWTON.

FRUITS.

The present condition of orchards: Apple, fair; peach, pear, plum and cherry, good.

Do not discover any injury resulting from the high temperature of the past autumn.

The extent of orchard planting in 1879 was heavy of all classes, and as most of the trees were shipped from a distance, the failure has been very heavy. Varieties planted largely were:

Apples: Ben Davis, Winesap, Missouri Pippin, Rawles Genet, Willow Twig, Smith's Cider. *Peaches:* Largely seedlings. *Plums:* Wild Goose, Miner, and a large number of Sand.

Wood growth: Apple, rather light; peach, fair; pear and cherry, light; plum, heavy.

The present indications for a crop of fruit in 1880 are—Apples, plums, grapes, strawberries, gooseberries and raspberries, good; peaches, heavy; pears, but few trees in bearing; cherries, fair; blackberries, light.

Quince trees have made a fair growth.

Mulching of small fruits has been beneficial.

New varieties of small fruits in this county which have been successfully planted: Strawberry—Chas. Downing, Col. Cheney, Crescent. Blackberry—Snyder. Gooseberry—Downing's, Smith. Raspberry—Turner. None of the above have yet fruited; prospects of a crop in 1880, promising.

New seedling fruits of Kansas origin: Peaches, several valuable varieties; Plums, six varieties of Sand—are good enough. Serviceberry, mulberry and barberry are cultivated in this county and succeed.

FORESTRY.

The cottonwood, elm, soft maple, catalpa and Lombardy poplar have been successfully introduced. For artificial timber groves and belts the cottonwood, mulberry, elm, [illegible] walnut, soft maple and [illegible] are well adapted.

Evergreens—Red cedar, Scotch, Austrian and white pines and Irish juniper grow well.

[illegible] [illegible] trees have been set [illegible] [illegible] [illegible] to a small [illegible].

[illegible]

[illegible]

Ornamental hedges: Japan quince, privet and yucca (*syn.* bear-grass) are preferable for such purposes.

Lawns: Kentucky blue-grass and white clover are successful.

The disposition to adorn the home surroundings with lawns, trees and flowering plants is strengthening.

JACKSON COUNTY.

BY W. D. BARNETT, HOLTON, AND J. W. WILLIAMS, COPE.

FRUITS.

The present condition of orchards: Good, of all classes; very little injury occurred, only to apple trees, from the high temperature of the past autumn.

Extent of orchard planting in 1879, was large of all classes, excepting plums. Varieties planted largely:

Apple: Ben Davis, Rawles Genet, Pearmains, Winesap, Missouri Pippin, Red Astrachan, Early Pennock, Lowell, Rambo, Jonathan, Willow Twig, Rome Beauty, Wagener, Carolina Red June, Early Harvest, Maiden's Blush. *Peach:* Crawford's Early, Heath Cling, Stump-the-World, George the Fourth, Hale's Early, Amsden's June, Alexander. *Pear:* Bartlett, Flemish Beauty, Duchesse d'Angouleme, Louise Bonne de Jersey, Sheldon, Vicar of Winkfield, Seckel. *Plum:* Chickasaw, Wild Goose, Damson, Miner, Sand. *Cherry:* Early Richmond, May Duke, English Morello, and Common Morello.

Owing to unfavorable weather in the spring of 1879, failures were moderately heavy.

Wood growth of 1879: Apple, good; peach, good; pear, very good; plum, small; cherry, fair.

The present indications for a crop of fruit in 1880, good to very good.

Rust: Very little has been seen.

Quince has been tried, but failed.

Pruning of the grape and small fruits: Grape—Trim off a portion of the old wood in February, and cut back the current year's growth to three or six buds, according to strength of vines. Blackberry and raspberry—Head off the growing canes to two and one-half feet from the base, and the laterals to six or eight inches from the canes, during autumn. Gooseberry and currant—Thin out the shoots, and trim in winter.

Nut-bearing trees cultivated: Almond, chestnut, and black walnut.

The pawpaw, persimmon, mulberry and serviceberry are cultivated to some extent.

FORESTRY.

Varieties successfully introduced: Ailanthus, catalpa, red cedar, black Austrian and Scotch pine.

Varieties of trees successfully cultivated in artificial forests, groves and belts: Red cedar, cottonwood, box elder, red and water elm, honey locust, white maple, willow.

Evergreens: Red cedar and most of the common classes suceeed.

Insects: The maple worm is the only one known to me.

Lawns: Kentucky blue-grass and white clover succeed admirably.

ORNAMENTALS.

Red cedar, black Austrian and Scotch pine, catalpa, chestnut, European larch, white birch, mountain ash, red bud, box elder and white elm have been successfully introduced.

Lawns: Kentucky blue-grass and white clover succeed.

Our people manifest a strong love for ornamentation around the home.

JEFFERSON COUNTY.

BY J. N. HALL, OSKALOOSA.

FRUITS.

The present condition of orchards of all classes of fruit trees good, excepting pear.

No apparent injury has resulted from the high temperature of the past autumn.

Wood growth of all classes in 1879, good.

The present indications for a crop of fruit in 1880: Apples and peaches, very good; cherries and raspberries, good.

Quinces have not been thoroughly tried.

Nut-bearing trees cultivated: Black walnut only. A few mulberry trees have been cultivated.

FORESTRY.

Varieties successfully cultivated in artificial forests, groves and belts: Soft maple, black walnut, cottonwood, and white elm.

Evergreens: A few red cedars.

JEWELL COUNTY.

BY JOHN S. FOSTER, JEWELL CITY.

FRUITS.

The present condition of all classes of orchards: Excellent; no injury has been discovered resulting from the high temperature of the past autumn.

Extent of orchard planting in 1879: A very heavy per cent. more than any previous year. The varieties largely planted are:

Apple: Red Astrachan, Cooper's Early White, Hightop Sweet (*syn.* Sweet June), Carolina Red June, Early Harvest, Large Yellow Bough (*syn.* Sweet Bough), Maiden's Blush, Alexander, Fameuse, Rambo, Ben Davis, Missouri Pippin, Winesap, Talman's Sweet, Rawles Genet, Jonathan, White Pippin, Wagener. *Peach:* Mostly seedlings; some Amsden's June, Hale's Early, Alexander, Crawford's Early and Late, Troth's Early, Old Mixon Free. *Pear:* Bartlett, Buffum, Howell, Clapp's Favorite, Flemish Beauty. *Plum:* Wild Goose. *Cherry:* Early Richmond, May Duke, Governor Wood, Reine Hortense.

The wood growth of 1879 was good of all classes, excepting cherry, which was very heavy.

Present indications for a crop of fruit in 1880: Apples, peaches, plums and grapes, good; cherries, fair; and excellent for all the small fruits.

Quinces have not been tried.

Mulching is good for all classes of small fruits, and, with shading, indispensable with currants.

New varieties of small fruits planted: Strawberry—Sharpless, Crescent Seedling, Captain Jack. Blackberry—Snyder, Western Triumph. Gooseberry—Downing. Raspberry—Gregg. They are successful.

Nut-bearing trees cultivated: Black walnut, largely; hickory, with some success.

Buffalo-berry, barberry, mulberry, pawpaw, persimmon and serviceberry are cultivated in this county.

FORESTRY.

Varieties successfully planted: Soft maple, red cedar, sycamore, cottonwood, honey locust, ash, walnut, hickory, elm, box elder.

Varieties successfully cultivated in artificial forests, groves and belts: Soft maple, cottonwood, ash, elm.

ORNAMENTALS.

The red cedar has been successfully introduced. Roses of all classes succeed.

Kentucky blue-grass does not fully succeed for lawns.

There is quite an interest felt among the people in beautifying the home grounds with lawns, trees, and attractive flowers.

JOHNSON COUNTY.

BY WM. MAXWELL, EDGERTON.

FRUITS.

Condition of orchards at present: Apple, pear, plum and cherry are excellent; peach, three-fifths of the fruit buds killed on budded varieties, and one-third on the seedlings. There are very few healthy trees in this locality.

Do not discover any injurious results from the high temperature of the past autumn.

Orchards were not planted extensively during 1879. Varieties planted largely:

Apples: Winesap, Rawles Genet, Ben Davis, Missouri Pippin, Willow Twig, Smith's Cider, Lawver, Huntsman's Favorite, Grimes's Golden, Roman Stem, Gilpin, Maiden's Blush, Fameuse, Fall Wine, Early Harvest, Carolina Red June, Red Astrachan. *Peaches:* Amsden's June, Alexander, Hale's Early, Crawford's Early, Old Mixon Free, Heath Cling, Stump-the-World. *Pears:* Bartlett, Seckel, Louise Bonne de Jersey, Flemish Beauty, Duchesse d'Angouleme, Buffum, Vicar of Winkfield, Howell. *Plums:* Wild Goose, Miner, and selected wild varieties. *Cherries:* Early Richmond, King's Early, Common Black Morello, English Morello.

Failures in planting: Apple, plum and cherry, one-tenth of the trees; peach and pear, one-eighth. Causes: Weakened condition of the trees at the time, produced by climatic influences during the winter of 1878 and 1879 and the spring of 1879.

Wood growth of all classes was fair.

Present indications for a crop of all classes of fruits in 1880 are good.

Quince has been tried; result not satisfactory.

Mulching proves to be beneficial to small fruits, and a dead shade for currants and gooseberries.

New seedling fruits of Kansas origin: Apples, peaches, plums and strawberries—several on trial; promising.

Rust has appeared lightly on the grape leaf, and is quite injurious to the leaves of the blackberry.

Pruning of grape-vines and small fruits: Grapes, moderately, in early spring; blackberries, clip shoots to three and a half feet in summer; raspberries, head back to three or three and a half feet in the fall.

Nut-bearing trees: The black walnut to some extent has been cultivated. Mulberry, persimmon and serviceberry have been cultivated, and are desirable.

FORESTRY.

Catalpa, ailanthus, silver-leafed poplar, white willow, red ash, hard maple and English elm have been successfully introduced. For artificial forests, groves and belts, the cottonwood, Lombardy poplar, silver-leafed poplar, blue and gray ash, ailanthus, catalpa and box elder are preferable. Chestnut and yellow poplar fail.

Evergreens: Red cedar, white spruce, black Austrian and Scotch pine are all valuable.

Insects: Black locust is destroyed by borers, and the soft maple defoliated by a white, hairy worm.

ORNAMENTALS.

White, Scotch and Austrian pines, spruce, red cedar and Irish juniper are successful as evergreens, and the snowball, spireas, lilacs, flowering almond, weigelia, rosea, syringa, acacia, honeysuckles and barberry are a successful list of flowering shrubs.

Roses: Moss—Perpetual White, Crested, King of Mosses; Hybrid China—Madam Plantier; Hybrid Perpetual—Caroline d'Sansal, Joan Hanet, Sydonie; Climbing—Queen of the Prairie, Gem of the Prairie, Baltimore Belle, Kentucky Multiflora. All are successful. Herbaceous flowering plants: Peonies, Bleeding Heart, Yuccas, Chrysanthemums, Hollyhocks, and Lilies.

For ornamental hedges, bayberry, spirea (opulafolia), weigelia rosea, common purple and Persian lilacs, syringa and Tartarian honeysuckle are all suitable and easily grown.

Lawns: Kentucky blue-grass and white clover succeed for such purposes.

There is a growing taste for ornamentals among the people in this county.

KINGMAN COUNTY.

BY L. W. LEACH, KINGMAN.

FRUITS.

The present condition of orchard trees, which survived the ordeals of the past year, is good. Do not discover any injurious results from the high temperature of the past autumn among any of the classes of trees, excepting the pear, which is damaged on the southwest side of the bodies.

The planting of 1879 was rather light, and fully one-half of the trees failed.

The wood growth of 1879, of all classes, was small.

The prospects for a crop of blackberries and raspberries in 1880 is good; gooesberries, fair; strawberries, rather poor.

Mulching of small fruits has been an advantage.

Pruning of grape-vines and small fruits: Grapes—On the renewal system. Blackberries—Canes should be nipped during the growing season, as soon as they attain to three feet in height, and raspberries at eighteen inches; and the lateral growth should be cut back to a foot. Gooseberries and Currants—Thin out the shoots after the leaves have fallen.

Nut-bearing trees: The black walnut is the only variety cultivated.

The Russian mulberry has been planted successfully.

FORESTRY.

Cottonwood, box elder, soft maple and walnut have been successfully introduced.

For artificial belts, the cottonwood, box elder, maple, walnut and Osage orange succeed.

Insects: Have noticed a green worm defoliating the cottonwood.

ORNAMENTALS.

This county is new, and very few ornamental trees and shrubs have been introduced. Have not found a rose of any kind planted in the county.

LABETTE COUNTY.

BY J. L. WILLIAMS, OSWEGO.

FRUITS.

Present condition of orchards in the county of all classes excellent, excepting peaches, which are fair; plums, good.

No injury is apparent resulting from the high temperature of the past autumn.

The extent of orchard planting is estimated at one-fifth of all previously set. Varieties planted largely:

Apples: Winesap, Ben Davis, Jonathan, Rawles Genet, Willow Twig. *Peaches:* Alexander, Hale's Early, Ward's Late Free. *Pears:* Bartlett, Clapp's Favorite, Flemish Beauty, Duchesse d'Angouleme, Vicar of Winkfield. *Plums:* Wild Goose, Miner. *Cherries:* Early Richmond.

Failures in planting were rather heavier than usual. Cause: Drying weather at planting season.

Wood growth, an average of other years on all classes.

Present indications for a crop of fruit in 1880, good with all classes.

A few young quince trees are fruiting successfully.

Mulching is highly beneficial. A light shade an advantage.

Rust: A very few cases on grape and blackberry leaves. Causes—Heavy rains and hot sun.

Prune the grape in November; small fruits during winter, when wood is not frozen.

Nut-bearing trees: Black walnut is cultivated. Serviceberry has recently been planted in small lots.

FORESTRY.

The catalpa has been successfully introduced. Varieties successfully grown in artificial forests, groves and belts: Lombardy poplar, walnut, maple, and cottonwood. Hickory and oak generally fail.

Evergreens successfully planted: Red cedar, black Austrian, Scotch and white pine, Irish juniper, and arbor vitæ.

Insects: Black locust suffers from borers.

ORNAMENTALS.

Trees: Mountain ash, willows, English alder, and tulip tree. Shrubs: Spirea, deutzia, snowball, flowering almond, Persian lilac and althea have been successfully introduced. Herbaceous flowering plants: Peony, phlox, bleeding heart, and hemerocalis. Roses of all classes succeed, with proper care.

Privet has been successful for ornamental hedges.

Lawns: Kentucky blue-grass and white clover succeed.

There is manifest a love for beautiful home surroundings by the people of this county.

LEAVENWORTH COUNTY.

BY E. J. HOLMAN, LEAVENWORTH.

FRUITS.

The present condition of orchards: Apples, excellent; peaches, with the exception of a few of the tender varieties, are in good condition; pears and plums, good; cherries, very best. Do not discover any injurious results from the high temperature of the past autumn.

The extent of orchard planting was an average of prior years. The varieties planted largely are:

Apple: Ben Davis, Missouri Pippin, Jonathan, Rawles Genet, and Winesap. *Peach:* Amsden's June, Hale's Early, Alexander, Ward's Late Free. *Pear:* Bartlett, Duchesse d' Angouleme, Seckel. *Plum:* Wild Goose and Lombard. *Cherry:* Early Richmond, May Duke, English Morello.

The failures of trees were about ten per cent. Cause of failure: Drouth at time of planting.

The wood growth was good with all classes of trees.

The present indications for a crop in 1880: Apples, cherries, grapes, strawberries, blackberries, currants, very good; peaches, fair; pears, plums, gooseberries, raspberries, good.

Quince has not been satisfactory. Some few trees are productive.

Mulching of small fruits has been very profitable.

Partial shade is beneficial with some varieties of small fruits; would not recommend it as a rule.

New varieties of small fruits planted: Strawberry—Captain Jack and Crescent Seedling, promising; Cumberland Triumph, not productive. Blackberry—Snyder, very hardy; berry, small. Raspberry—Brandywine, Highland Hardy, Turner and Norwood, hardy and productive.

Rust appears on the blackberry leaves only. Remedy: Dig the affected plants, and burn them.

Pruning of the grape and small fruits: Grape—Cut back in February, leaving only four or five eyes on the last year's growth. Gooseberry and currants—Thin and cut back in March. Blackberry and raspberry—Trim in April, leaving the main stems three feet high; clip the lateral growth at a point twelve to twenty inches from the cane, according to the vigor of the plant.

Nut-bearing trees cultivated in this county: Spanish and American sweet chestnut.

FORESTRY.

Cottonwood, maple and walnut have been successfully grown in groves and belts.

Evergreens: Red cedar, Scotch and Austrian pines are successfully planted.

Lawns: Kentucky blue-grass and white clover succeed for lawn purposes.

There is a disposition among the people to surround the home with lawns, trees and flowering plants.

LINCOLN COUNTY.

BY J. P. HARMAN, VESPER.

FRUITS.

The present condition of orchards: Apples, peaches and plums, good; pears, failure; cherries, not satisfactory.

The high temperature of the past autumn injured, to some extent, the peach and pear only.

Apple orchards were planted in the spring of 1879 to a large extent; all other classes of fruit to limited extent. The following varieties were planted largely:

Apples: Ben Davis, Winesap, Nonsuch, Red Astrachan, Rawles Genet, Golden Russet, Early Harvest, White Winter Pearmain. *Peaches:* Principally seedlings. *Pears:* Flemish Beauty, Duchesse d'Angouleme. *Plums:* Green Gage. *Cherries:* Early Richmond, English Morello.

Failures: Of the apple trees planted in 1879, 15 per cent. failed; peach, 20 per cent.; pear, 50 per cent.; plum, 10 per cent,; cherry, 15 per cent. Causes of failure—Improper planting, bad condition of the trees at time planted, unfavorable climatic conditions temporarily existing after trees were planted, and neglect.

The wood growth of apple not vigorous; peach, good; pear, very short; plum and cherry, fair.

The present indications for a crop of fruit in 1880 are: Apples, peaches, pears, plums, currants, gooseberries, raspberries, very good; cherries, grapes, excellent; strawberries, fair.

Quinces, where tried, fail.

Small fruits are very much benefited by mulch and shade.

Of the varieties of small fruits planted: Blackberries—Kittatinny and New Rochelle (*syn.* Lawton) are preferable. Currants—Red Dutch, White Grapes, and La Versailles. Gooseberries—Smith's Improved, Pale Red (*syn.* Cluster), and Downing, are a splendid success. Raspberries—Philadelphia, McCormick (*syn.* Mammoth Cluster).

Grapes should be pruned in February; blackberry and raspberry canes nipped off as soon as they have attained to three-feet growth; gooseberry, thin out one-half of every year's growth in March.

FORESTRY.

Varieties of forest trees successfully introduced: Cottonwood, box elder, walnut, ash, and maple.

Varieties successfully cultivated in forests, groves and belts: Elm, ash, ailanthus, cedar, Lombardy poplar, catalpa, black and yellow locust.

Evergreens have not been successfully planted.

LINN COUNTY.

BY J. W. LATIMER, PLEASANTON.

FRUITS.

The present condition of orchards: Apples, most excellent; peaches, young trees are good; the trees planted prior to 1878 are damaged. All other classes of fruit trees are in good condition. Do not discover any injury from the high temperature of the past autumn. Varieties planted largely:

Apples: Ben Davis, Winesap, Missouri Pippin, Willow Twig, Early Harvest, Red Astrachan, Maiden's Blush, and Rambo. *Peaches:* Crawford's Early, Hale's Early, Stump-the-World. *Pears:* Bartlett. *Plums:* Wild Goose. *Cherries:* Early Richmond.

A large per cent. of all the trees and plants set in the spring of 1879, failed. Causes: Unfavorable climatic conditions during the winter of 1878–9, and the autumn of 1878.

The wood growth was good among all classes.

The present indications for a crop of fruit are favorable for all classes, except the currant.

Quinces have been successful when planted on proper soil.

Mulching has proved beneficial where tried.

New varieties of small fruits: Strawberry — Sharpless. Gooseberry — Downing and Smith's Improved are on trial.

Seedling fruit of Kansas origin: Peach — fine promising variety.

Rust has appeared on the leaves of blackberry plants, especially the Kittatinny. It occurs in patches abused by the plow or in other ways, injuring the roots.

Nut-bearing trees: American sweet chestnut has been cultivated succcessfully. Serviceberry is succeeding in plant and fruit.

FORESTRY.

Varieties successfully introduced: American chestnut, catalpa, beech, balm of Gilead.

Evergreens: Red and white cedar, Scotch and Austrian pine are successful. Norway spruce, when mulched, thrives.

ORNAMENTALS.

Cut-leaf birch, chestnut and catalpa succeed.

Shrubs: Flowering almond, acacia, snowball, weigelia, spireas, deutzia, forsythia, syringa, hydrangea and Japan quince succeed.

Roses: All classes are doing well.

Herbaceous plants are generally successful with proper care.

Ornamental hedges: The privet is successful.

Lawns: Kentucky blue-grass and white clover are successful.

A more positive disposition is manifested among the people to surround the home with lawns, trees, and flowers.

LYON COUNTY.

BY ROBERT MILLIKEN, EMPORIA.

FRUITS.

The present condition of orchards: Apple, good; peach, young trees good, old trees poor; plum, promising; cherry, good. Injury resulting from the high temperature of the past autumn: Apple—Buds swollen, and in some places bloomed in late autumn. Peach—Buds reported injured. Pear—Buds same condition as the apple; bloomed more profusely in October and November. Plum and cherry—Not injured. Varieties of fruit planted largely:

Apples: Ben Davis, Rawles Genet, Missouri Pippin, Early Harvest, Carolina Red June, Maiden's Blush, Rambo, in the order named. *Peaches:* Alexander, Early Beatrice, Hale's Early, Crawford's Early and Late, Early York (serrate), Heath Cling. *Pears:* Bartlett, Clapp's Favorite, Duchesse d'Angouleme, Louise Bonne de Jersey, Vicar of Winkfield, Souvenir du Congres. *Cherries:* Early Richmond, Common Morello, English Morello.

The failures in planting light, considering the season.

Wood growth: Apple and pear, very good. All the other classes good.

The present indications for a crop of all classes of fruit in 1880, favorable.

Quinces, when protected from borers, are successful.

Mulching of small fruits, as a protection from the drouth of summer and autumn and protection in winter, is beneficial, especially with strawberries.

New varieties of small fruits: Strawberry—Crescent, Sharpless, Forest Rose, Durand's Beauty, Pioneer. Blackberry—Snyder. Gooseberry—Downing's. Raspberry—Thwack, Henrietta, Gregg, Pride of the Hudson. Have been planted, and generally doing well.

New seedling fruit of Kansas origin: Peaches—Several promising varieties have been produced in this county.

Wild and cultivated blackberries have suffered in some places from the red rust during the past three or four years. Remedy: Cut out and burn the affected plants.

MISCELLANEOUS FRUITS.

Barberry, mulberry and persimmon are grown as ornamentals to some extent. Serviceberry is also grown.

FORESTRY.

Varieties of forest trees successfully cultivated: White elm, green ash, walnut, coffee tree, mulberry, hackberry, pecan, shagbark hickory, bur, red and chinquapin oak, cottonwood, box elder, persimmon, catalpa bignonoides, deciduous cypress, Lombardy and silver-leafed poplar, red bud, wahoo, and wild cherry. List of varieties adapted to artificial forests, groves and belts: Cottonwood, catalpa and walnut. Black and yellow locust and soft maple have generally failed.

Evergreens: Red cedar, Austrian and white pines succeed.

Insects: Borers are seriously injuring the Lombardy and silver-leafed poplars, cottonwood and ash.

ORNAMENTALS.

Shrubs: Lilacs, viburnums, barberry, Japan quince, altheas, spireas, hydrangea, honeysuckles, privet, weigelia, syringa. Roses: Moss — Common Moss, Murinais, Princess Adelaide, Glory of Mosses, Raphael, Luxembourg. Hybrid Bourbon — Most popular are Hermosa, M. Boran, Peerless, Phœnix, Sir J. Paxton, Souvenir de Malmaison. Hybrid Perpetuals are generally successful if given proper care. Climbing — Queen of the Prairie, Baltimore Belle, White Ayrshire, Gem of the Prairie. Herbaceous plants: Chrysanthemums, bleeding heart, columbine, larkspur, peonies, dianthus, iris, geraniums, pumila, lilies, phlox, native verbena, yucca filamentosa.

For ornamental hedges, barberry, privet and plum-leafed spirea are successful. Of the evergreens, American arbor vitæ, red cedar and Norway spruce have been tried, and failed.

Lawns: Kentucky blue-grass and white clover are successful for such purposes.

There is a strong desire manifested by the people of this county to beautify their home surroundings with lawns, trees and flowering plants.

MARSHALL COUNTY.

BY JOHN McKEE, MARYSVILLE.

FRUITS.

The condition of orchards of all classes is good, excepting the pear. The extent of orchard planting: Apple and peach, greater than in previous years; of the other classes, only a few trees were planted. Varieties planted largely:

Apples: Ben Davis, Winesap, Rawles Genet, Yellow Bellflower, Early

Harvest, Red Astrachan. Crabs—Hyslop, Whitney's No. 20. *Plums:* Wild Goose. *Cherries:* Early Richmond, English Morello, May Duke.

Of small fruits: Gooseberry—Houghton, Smith's Improved, and Downing. Raspberry—Blackcap varieties. Blackberry—Kittatinny and Snyder.

Failures were very light in 1879, and mostly among pear trees.

The wood growth was fair among all classes excepting the pear, which was poor.

The present indications for a crop of fruit in 1880: Apple and peach, good; all other classes, rather poor.

Quince has not been thoroughly tried.

Mulching of the small fruits is necessary to obtain the best results.

Pruning of the grape and small fruits should be done in the autumn.

The red cedar has been very successfully planted.

ORNAMENTALS.

Some of the hardy classes have been successfully introduced.

Lawns: Kentucky blue-grass succeeds very well for such purposes. There is quite a disposition manifested by the people to construct lawns and plant shade trees and flowering plants in ornamentation of the grounds around their dwellings.

McPHERSON COUNTY.

BY THEO. BOGGS, M'PHERSON.

FRUITS.

The present condition of orchards of all classes is good. There is no apparent injury to any classes of fruit, resulting from the high temperature of the past autumn. Extent of orchard planting in 1879 was greater than during previous years. Varieties planted largely:

Apples: Ben Davis, Winesap, Early Harvest, Carolina Red June, Rawles Genet, Missouri Pippin, Fameuse. *Peaches:* Stump-the-World, Crawford's Early, Heath Cling, Old Mixon Cling. *Pears:* Bartlett, Duchesse d'Angouleme, Belle Lucrative, Louise Bonne de Jersey. *Plums:* Wild Goose. *Cherries:* Early Richmond, May Duke.

The failures in plantings were rather heavier than usual.

The wood growth has been heavy with all classes.

The present indications for a crop of fruit in 1880: Apples and pears, limited, as trees are young; peaches, plums, grapes, strawberries, blackberries, raspberries, good; cherries, currants, gooseberries, light.

The quince has been tried in small numbers.

Mulching has proved beneficial to all classes of small fruits.

Pruning of grapes should be done in the latter part of autumn, and covered with litter and earth, and blackberry and raspberry canes headed back to two or three feet in length.

FORESTRY.

Varieties successfully cultivated in artificial forests, groves and belts: Ash, catalpa, cottonwood, American chestnut, black and honey locust, white maple, oak, black and white walnut. Red cedar has been successfully planted.

ORNAMENTALS.

The following have been successfully introduced: Balsam fir, black Austrian and Scotch pine, American arbor vitæ.

Ornamental hedges: American arbor vitæ, privet and Russian mulberry succeed.

Lawns: Kentucky blue-grass succeeds for such purposes. There is manifested by the people a love for adorning the home surroundings with lawns, trees and flowering plants.

MIAMI COUNTY.

BY L. BISHOP, OSAWATOMIE.

FRUITS.

The present condition of orchards: Apple, excellent; peach, young trees lightly damaged; pear and plum, good; cherry, excellent. No injury is apparent occurring from the high temperature of the past autumn. Extent of orchard planting: Apple and cherry, extensive; peach, pear and plum, limited. Varieties planted largely:

Apples: Ben Davis, Willow Twig, Winesap, Rawles Genet, Missouri Pippin, Early Harvest, Carolina Red June, Maiden's Blush, Lowell. *Peaches:* Amsden's June, Hale's Early, Early York, Ward's Late Free, Heath Cling. *Pears:* Bartlett, Flemish Beauty, Buffum, Belle Lucrative, Duchesse d'Angouleme, Vicar of Winkfield. *Plums:* Wild Goose. *Cherries:* Early Richmond, English Morello, Leib.

The failures in planting were very light. Causes of failures, weak condition of the trees.

The wood growth of all classes was good.

The present indications for a crop of fruit in 1880: Apples, pears and strawberries, excellent; plums, peaches, cherries, grapes, blackberries, currants and gooseberries, good; raspberries, canes some damaged.

The quince is not successful.

Mulching and shading is apparently beneficial.

New varieties of small fruits planted: Strawberry — Sharpless, Crescent Seedling and Crystal White grow well. Gooseberry — Downing is excellent. Raspberry — Gregg vigorous plant.

New seedling fruit of Kansas origin: Apple and peach, promising.

Pruning of grape vines and small fruits: Grape—Remove wood sufficient to open the vines to light and air. Blackberry and raspberry—Clip canes in growing season to three feet from the ground. Gooseberry and currant—Thin out old wood.

Serviceberry, Downing's mulberry and barberry are cultivated.

FORESTRY.

Varieties successfully cultivated in artificial forests, groves and belts: Black walnut, catalpa, red and white elm, sycamore, hard maple, white ash, red cedar, mulberry.

General failures: Tulip tree, chestnut, butternut.

Evergreens: The red cedar is a perfect success. White, black Austrian and Scotch pines are valuable in the order named.

ORNAMENTALS.

Trees successfully planted: Red cedar, white, black Austrian and Scotch pines, balsam fir, spruce, arbor vitæ, trailing juniper.

Shrubs: Rose acacia, flowering almond, snowball, althea, syringa, Japan quince, spireas, lilacs, forsythia, tree peonies, purple fringe, upright honeysuckle, climbing honeysuckle, wistaria, bittersweet.

Roses: Moss, damask, hybrid perpetual and climbing all succeed.

Lawns: Kentucky blue-grass and white clover succeed for such purposes.

There has been much done in beautifying the lots around the home with lawns, trees and attractive flowering plants, and the work is increasing in proportion to the ability of the people.

MITCHELL COUNTY.

BY E. A. TAYLOR, BELOIT.

FRUITS.

The present condition of orchards: Apple, good, outside of the path of the hail storm of June, 1879; peaches, poor, from effects of winter of 1878-9. All other classes good, excepting in localities where the hail storm passed. Do not discover any injurious results from the high temperature of the past autumn. Orchard planting: Apple, peach, plum, cherry, extensively; pear, not extensively. The following varieties were planted largely:

Apples: Early Harvest, Red Astrachan, Maiden's Blush, Rambo, Fall Wine, Ben Davis, Winesap, Rawles Genet, Missouri Pippin, Fameuse, Rome Beauty, Wagener. *Peaches:* Amsden's June, Foster, Alexander, Crawford's Early and Late, Heath Cling. *Pears:* Bartlett, Flemish Beauty, Clapp's Favorite, White Doyenne. *Plums:* Wild Goose, Miner, Lombard. *Cherries:*

Early Richmond, English Morello, Gov. Wood, Yellow Spanish, Montmorency.

Failures: Apple and cherry, 10 per cent.; pear and plum, 5 per cent.; peach, 50 per cent. Cause of failure: Climatic extremes of the winter preceding planting.

Wood growth: Apple and peach, medium; pear, plum and cherry, good.

The present indications for a crop of fruit in 1880: Apples and cherries, very good; pears, plums, grapes, blackberries, currants, gooseberries, raspberries, good; peaches and strawberries, poor.

Quince culture has not been successful.

Mulching of small fruits has been beneficial.

New varieties of small fruits introduced: Blackberry—Snyder, promising. Raspberry—Turner, promising.

Rust has appeared on the leaves of the Kittatinny blackberry only; under ordinary circumstances on dry soil.

Nut-bearing trees in cultivation, black walnut only. Mulberry has been cultivated.

FORESTRY.

The soft maple has been successfully introduced. Varieties for artificial forests, groves and belts: Cottonwood, box elder, elm, ash, black walnut, and mulberry. Red cedar has been successfully planted.

Varieties of trees that have been planted and generally fail: Chestnut, ailanthus, Lombardy poplar, and hard maple.

ORNAMENTALS.

The following have been successfully introduced: Catalpa, silver-leafed maple, and red cedar.

Roses successful: Moss—Pride of Mosses, Salet; Hybrid Perpetual—Gen. Washington, Josie's Favorite, Napoleon; Climbing—Queen of the Prairie, Baltimore Belle.

Flowering shrubs: Spireas, lilacs, flowering almond, currant, and snowball.

For ornamental hedge, privet.

Lawns: Kentucky blue-grass and white clover are a success.

MONTGOMERY COUNTY.

BY L. A. WALKER, INDEPENDENCE.

FRUITS.

The present condition of apple orchards in the aggregate is not very good. There are exceptional instances showing good condition. Of peach, not the best; of pear and plum, promising; of cherry, good. Do not learn of any cause for complaint of the high temperature of the past autumn.

Quite extensive orchards were planted in 1879.

Failures of planting of trees shipped in, were large. Such as were procured from home nurseries succeeded.

Wood growth of all classes was fair and healthy.

Present prospects of a crop of fruit in 1880 for all classes, good.

Quince trees have not yet proved productive.

The pruning of grapes should be done before the middle of February. Leave from one to four buds upon young shoots for fruiting.

Nut-bearing trees under cultivation: Almond, chestnut, and walnut. The second only has fruited.

FORESTRY.

The catalpa and Lombardy poplar have been successfully introduced. Varieties for forests, groves and belts: Poplar, catalpa, walnut, Osage orange, cottonwood, sycamore, box elder, and elm.

Evergreens succeed when properly treated.

ORNAMENTALS.

Shrubs successfully introduced: Altheas, snowball, syringa, spirea, Japan quince. All classes of roses are at home in this latitude.

Lawns: There are many instances of the success of Kentucky blue-grass for lawn purposes.

There are creditable evidences of a desire among the people of this county to beautify the home surroundings, both in town and rural districts.

MORRIS COUNTY.

BY F. B. HARRIS, WHITE CITY.

FRUITS.

Present condition of orchards: Apple, good; peach, young trees are good, and old trees below an average; pear, fair; plum and cherry, very good. Do not discover any material injury resulting from the high temperature of the past autumn.

The extent of orchard planting was not heavy. Varieties leading in the planting:

Apples: Ben Davis, Winesap, and Rawles Genet. *Peaches:* Seedlings. *Plums:* Wild Goose and natives. *Cherries:* Early Richmond.

The failures in planting were one-fourth. Cause, unfavorable weather in the spring and during the growing season.

Wood growth: Apple and cherry, moderate; peach and plum, good; pear, small.

The present indications for a crop of fruit in 1880: Apples, peaches, cherries, strawberries and raspberries, good; plums, excellent; other classes, uncertain.

The quince has not been tried.

Mulching of small fruits is beneficial.

Pruning of grapes and small fruits: Grape—Should be well headed back; leave only one cane to fruit until the vine is four years old, and then add one cane every two years thereafter. Raspberry and blackberry—Train low by summer pinching; stake raspberries. Gooseberry—Leave one to three stems, according to strength of plant. Currants—Remove the old wood every second or third year.

Nut-bearing trees: I am cultivating ten acres of black walnuts—more for timber than the nuts. Planted the shellbark hickory three years ago, and none are now more than one and one-half feet high. I also cultivate the white mulberry.

FORESTRY.

Soft maple and catalpa have been successfully introduced.

Varieties successfully grown in forests, groves and belts: Cottonwood, walnut, box elder, maple, elm, hackberry, and all kinds indigenous to the native forest of this county.

Red cedar has been successfully planted.

Varieties of forest trees failing generally: Chestnut, shellbark hickory, and hard maple.

Insects: Borers troubled the box elder the past summer.

ORNAMENTALS.

A few of the white and Austrian pines have been successfully introduced.

Lawns: Kentucky blue-grass does well for such purposes.

NEMAHA COUNTY.

BY S. J. EDGERLY, SENECA.

FRUITS.

The present condition of orchards in this county: Apple, good; peach, trees nearly all dead, caused by cold of winter of 1878 and 1879; pear, trees nearly all dead, from blight; cherry, fine. Injury resulting from the high temperature of the past autumn: Apple, a late growth; young shoots so injured in some varieties as to render them unfit for propagation. Extent of orchard planting: Apple, peach and cherry, extensive; pear and plum, not extensive. Varieties planted largely:

Apples: Ben Davis, Winesap, Rawles Genet, Jonathan, Rambo, Fameuse (*syn.* Snow), Maiden's Blush, Early Harvest, Red Astrachan, Carolina Red June. *Peaches:* Amsden's June, Alexander, Foster, Smock, Stump-the-

World, Crawford's Early and Late, Early Rivers, Early Beatrice. *Pears:* Bartlett, Seckel, Vicar of Winkfield. *Plums:* Wild Goose, Miner. *Cherries:* Early Richmond, May Duke, Late Duke, Belle Magnifique, Reine Hortense, English Morello.

Failures in planting, one-fourth of all classes. Causes: Unfavorable condition in autumn 1878, and hard winter following, and the dry condition of soil in May, 1879.

Wood growth: Of apple, peach, pear, plum and cherry, an average of other years.

Present indications for a crop of fruit in 1880: Apples and grapes, good; cherries, fair. All the other classes poor.

The quince repeatedly fails.

Mulching of small fruits is beneficial.

New varieties of small fruits: Raspberries—Turner, Herstine and Brandywine were planted, and look promising.

Nut-bearing trees: A few black walnuts are cultivated.

FORESTRY.

Varieties successfully planted for forests, groves and belts: Cottonwood, soft maple, honey locust, walnut, and white ash. Hard maple fails.

Evergreens: Red cedar has been successfully planted.

Insects: The maple worm defoliates the maple trees.

ORNAMENTALS.

Lawns: Kentucky blue-grass is successful for such purposes.

To some extent a taste is manifest in adorning the home surroundings.

NEOSHO COUNTY.

BY GEO. W. ASHBY, CHANUTE.

FRUITS.

The present condition of orchards in this county is good, for all classes, excepting peaches, which were damaged by the extreme cold of winter of 1878-9. No material injury occurred from the high temperature of the past autumn. Extent of orchard planting: Apple and plum, an increase on former years; peach, less; pear and cherry, equal. Varieties planted largely:

Apples: Early Harvest, Carolina Red June, Maiden's Blush, Rambo, Missouri Pippin, Ben Davis, Winesap, Rawles Genet, Limber Twig. *Peaches:* Amsden's June, Hale's Early, Alexander, Crawford's Early and Late, Heath Cling, Smock. *Pears:* Bartlett, Clapp's Favorite, Duchesse d'Angouleme, Gloat Morceau, Harvest, Vicar of Winkfield. *Plums:* Wild Goose, Chickasaw. *Cherries:* Common Morello, Early Richmond, English Morello, Reine Hortense, Gov. Wood.

Failures in planting, generally light. Cause of failure, dry weather during the spring.

The wood growth of all classes, good, excepting the peach, which was fair.

The present indications for a crop of fruit in 1880, good, for all classes except currants.

Quince is a success. Trees require age (from 8 to 10 years) to fruit.

Mulching increases quantity and quality of most classes of small fruits.

New varieties (new to this county) of small fruits planted: Strawberry—Charles Downing, Dr. Warder, successful. Raspberry—Herstine, not fruited.

New varieties of seedling fruit, Kansas origin: Peach—If all the old varieties were stricken from the list, substitutes could be found of Kansas origin of at least equal value. Plum—A variety of uncommonly good quality.

Rust has appeared on the blackberry leaves. Causes—Hot weather, heavy dews and rains.

Pruning grape-vines and small fruits: Grape—Cut back the lateral growth of previous year in proportion to age and vigor of vine, in January or February. Blackberry and raspberry—Clip the ends of the growing cane when three feet long, and remove old wood in autumn.

Nut-bearing trees planted: Black walnut, pecan, and chestnut.

The mulberry, pawpaw, persimmon and serviceberry are natives of the forests in this county. Of the serviceberry there are two varieties—one a dwarf, the other forms quite a tree; both are fruitful.

FORESTRY.

Varieties successfully cultivated in artificial forests, groves and belts: Cottonwood, white and red elm, soft maple, box elder, ash, willow, Lombardy poplar, black walnut, ailanthus, catalpa, sycamore, honey locust, and mulberry.

Evergreens: Red cedar, Scotch, black Austrian and white pine, Norway spruce, and balsam fir, do extremely well; arbor vitæ, questionable.

Insects: Soft-maple trees are defoliated in July and August by the maple worm to such an extent as to discourage planting.

ORNAMENTALS.

Trees: Red cedar, Scotch, black Austrian and white pine, Norway spruce, balsam fir. Shrubs: Lilacs, altheas, spireas, weigelias, snowball, tamarix, forsythia. Climbing: Honeysuckles, trumpet flower (bignonia), Virginian creeper (*ampelopsis*). Roses: Moss—Princess Adelaide, Glory of Mosses; Hybrid Bourbon—Marechal Neil, Hermosa, Mad'lle Rachel; Hybrid Perpetual—Coquette d'Alps, D'Conard, Gen. Washington, Jacque Minot, Giant of Battles, Lord Raglan; Climbing—Queen of Prairie, Baltimore Belle, Seven Sisters, have been successfully grown.

Ornamental hedge: Privet a success.

Lawns: Kentucky blue-grass and white clover succeed. The interest in adorning home surroundings with lawns, trees and attractive flowers is annually increasing among the people.

NESS COUNTY.

BY N. W. SHAW, NEVADA.

FRUITS.

This being one of the counties but very recently opened to settlement, there are only a very few apple and peach trees planted, to this date, which, owing to the unfavorable condition of the ground and weather the past year, did not make a very extensive growth.

FORESTRY.

A few ash, elm, cottonwood and walnut have been planted, and also red cedar, successfully.

Being an unorganized county, no statistical report can be given.

OSAGE COUNTY.

BY W. D. JONES, BARCLAY.

FRUITS.

The present condition of orchards: Apple, good; peach, injured by the extremes of March, 1879, (those not killed have recovered); pear, plum and cherry, good. Do not discover any injurious results from the high temperature of the past autumn. Extent of orchard planting: Apple and peach, extensive; pear and plum, not extensive; cherry, light. Varieties extensively planted are—

Apples: Winesap, Ben Davis, Missouri Pippin, Rawles Genet, Maiden's Blush. *Peaches:* Amsden's June, Hale's Early, Alexander, Crawford's Early and Late, Heath Cling. *Pears:* Bartlett, Flemish Beauty, Belle Lucrative, Clapp's Favorite, Seckel. *Plums:* Wild Goose, Miner. *Cherries:* Early Richmond, Gov. Wood.

Failures, about one-fifth of all classes. Causes of failure: Mainly the poor condition in which tree dealers delivered them, and neglect of the purchasers before planting.

Wood growth: All classes made a fair but not large growth.

The present indications for a crop of fruit in 1880 are good for all classes, except currants, which have not succeeded in this county.

Quinces have failed.

Mulching of small fruits has been beneficial. Good culture is equally as good. Strawberries must be mulched in winter, to succeed.

New varieties of small fruits: Strawberry—Capt. Jack, Crescent Seedling, Sharpless and Glendale have been planted. Blackberry—Snyder is very hardy, and productive; fruit good. Raspberry—Turner, very hardy, and productive.

New seedling fruit of Kansas origin: Several promising varieties of peaches; raspberry, a very fine blackcap, hardy and prolific.

Pruning of the grape-vine and small fruits: Grapes are most successfully trimmed to long canes in February. Blackberry and raspberry canes should be tipped in summer at two and a half to three feet from the crown, and in early spring following the laterals shortened in.

Nut-bearing trees: The black walnut is the most extensively cultivated.

Mulberry and persimmon have been planted, but do not succeed.

FORESTRY.

Catalpa, ailanthus and Osage orange have been successfully introduced. Varieties successfully used for artificial forests, groves and belts: Cottonwood, walnut, soft maple, box elder, white ash, catalpa, Osage orange, and honey locust. The American chestnut has failed; hard maple, partially.

Evergreens: Red cedar, black Austrian and Scotch pine are successful. White pine and Norway spruce are tolerably successful, when protected by belts of other trees.

Insects: Some years the maple worm defoliates the soft maple.

ORNAMENTALS.

Red cedar, black Austrian and Scotch pine, mulberry, catalpa, and the shrubs double-flowering almond, syringa, althea, and spireas, have been successfully introduced. Many varieties of all classes of roses succeed. Herbaceous plants: Peonies, phloxes, columbine and bleeding heart succeed.

Lawns: Kentucky blue-grass and white clover succeed for such purposes.

An increasing interest is manifested in beautifying the home surroundings.

OSBORNE COUNTY.

BY M. MOHLER, OSBORNE CITY.

FRUITS.

The present condition of orchards is good. There is no injury apparent occurring from the high temperature of the past autumn. Extent of orchard planting: Apple, large; and light of the other classes. Varieties planted largely:

Apples: Ben Davis, Missouri Pippin, Rawles Genet, Winesap, Jonathan, Red Astrachan, Carolina Red June, Maiden's Blush. *Peaches:* Hale's Early, Stump-the-World. *Cherries:* Early Richmond.

Owing to the damaged condition of trees when received, and unfavorable weather at time of planting, a large per cent. failed.

The wood growth was poor.

The present indications for a crop of fruit in 1880 are not very good.

The quince has not been fully tested.

Mulching has proved highly beneficial to small fruits.

Nut-bearing trees: The black walnut only has been cultivated.

FORESTRY.

The box elder, cottonwood and walnut have been successfully cultivated for artificial forests, groves, and belts.

Evergreens: The red cedar, black Austrian and Scotch pines and Norway spruce have been successfully planted.

ORNAMENTALS.

The soft maple, honey locust and poplar have been successfully introduced.

OTTAWA COUNTY.

BY J. W. MCLAREN, SUMMERVILLE.

FRUITS.

The present condition of orchards, all classes, is good, excepting the pear, which is poor. Do not discover any injury resulting from the high temperature of the past autumn. Extent of orchard planting is an average of former years. The varieties planted are generally such as nurserymen and tree peddlers recommend.

The failures in planting were generally light. Causes of failures: Unfavorable weather, poor condition of trees, and some from insect attacks.

The wood growth of all classes is good.

The present indications for a crop in 1880 are good for all classes, excepting the pear, grape, and currant.

Quince has not been successful.

Mulching has been an advantage with the strawberry, blackberry, and raspberry.

New seedling fruit of Kansas origin: Raspberry, promising.

Pruning of the raspberry and blackberry: Cut the canes back to three feet in height, and the laterals to eighteen inches from the canes.

The mulberry is cultivated to some extent.

FORESTRY.

Varieties successfully introduced: Ailanthus, catalpa, Lombardy poplar, white walnut.

Varieties successfully cultivated in artificial forests, groves, and belts: Ash, box elder, catalpa, cottonwood, elm, white maple, Lombardy poplar, black walnut.

The peach tree is grown for wind-breaks.

Evergreens succeed when obtained in good condition.

ORNAMENTALS.

Shrubs successfully introduced: Flowering almond, lilac, snowball, climbing honeysuckle.

Roses: All the hardy classes.

Ornamental hedges: Osage orange.

Lawns: Kentucky blue-grass succeeds.

There is a strong desire manifested to ornament the home surroundings with lawns, trees, and attractive flowers.

PAWNEE COUNTY.

BY C. C. CHEVALIER, GARFIELD.

FRUITS.

The present condition of orchards in this county, of the apple and peach, rather poor; pear, plum and cherry, good. All things considered, there is no serious cause for discouragement. No injury apparent occurring from the high temperature of the past autumn. The extent of orchard planting not large, owing to unfavorable weather prevailing during the planting season. Varieties largely planted:

Apples: Winesap, Ben Davis, Rawles Genet, Jonathan, Missouri Pippin. *Peaches:* Amsden's June, Hale's Early, and large numbers of seedlings. *Plums:* Wild Goose. *Cherries:* Early Richmond, May Duke, Late Duke.

The failures were heavy, owing to the extremely unfavorable conditions of climate.

Present indications for a crop of fruit in 1880: Apples, trees too young to fruit; peaches, pears, plums, cherries, fair; grapes, currants, gooseberries, very good.

Very few quince trees planted; make good growth in favorable seasons.

Mulching and shading small fruits afford very favorable results.

New varieties of small fruits planted: Blackberry—Snyder. Gooseberry—Smith's Improved, Downing. Raspberry—Gregg.

Training of grape-vines and small fruits: Grapes—Some adopt the bow system. Blackberry, raspberry, gooseberry and currant—Would train to form a small tree.

Nut-bearing trees: Some black walnuts planted.

Mulberry and persimmon grow quite well.

FORESTRY.

Varieties successfully introduced: Ailanthus, yellow locust, black walnut, catalpa, Osage orange, and white willow.

Varieties successfully cultivated in artificial forests, groves and belts: Ailanthus, cottonwood, box elder, white ash, catalpa, black walnut, white willow, and Osage orange. Chestnut, European larch, hard maple, hickory, elm and beach generally fail.

Evergreens: Red cedar is quite difficult to transplant.

Insects: Ash, elm, hackberry and mulberry are attacked by a flat-head borer.

ORNAMENTALS.

The following have been planted in this county: Mountain, Scotch and black Austrian pines, and red cedar.

Roses of all classes, excepting the hybrid perpetual, succeed.

This county is mostly settled with Eastern people, who bring with them a love for a beautiful home and the adornment of its surroundings.

RENO COUNTY.

BY A. S. DIMOCK, HUTCHINSON.

FRUITS.

The present condition of orchards in this county is good with all classes. Do not discover any injury resulting from the high temperature of the past autumn. Extent of orchard planting: Apple and pear, small; peach and cherry, an average of other years. Varieties planted largely:

Apples: Ben Davis, Rawles Genet, Rambo, Winesap, Early Harvest, *Peaches:* Crawford's Early and Late, Lemon Cling, Blood Cling, Hale's Early, Snow, Amsden's June, Foster, Alexander. *Cherries:* Early Richmond, Common Morello.

Failures in planting were heavy, owing to unfavorable weather at time the trees were set, and following.

Wood growth: Apple and peach, light; pear, very light; plum, good; cherry, fair.

The present indications for a crop of fruit in 1880: Apples, good, considering age of trees; plums and cherries, very good.

The quince has not been satisfactory.

Mulching of small fruits beneficial when well done.

New seedling fruit of Kansas origin: Peaches, several worthy varieties.

Pruning grape-vines and small fruits: Grapes — Leave only two canes four and a half feet long (this is for established vines of fruiting age), and pinch off the laterals. Blackberries and raspberries — Cut out all but four canes, and clip them off at four feet growth. Pruning should be done in mild days in December.

Nut-bearing trees: The black walnut is cultivated.

Barberry grows well. Russian mulberry succeeds, and fruits at three years of age. Persimmon is a success.

FORESTRY.

Varieties successfully introduced: Cottonwood, box elder, soft maple, white ash, coffee bean, white elm, and black walnut. Varieties successfully planted for artificial forests, groves and belts: Cottonwood, box elder, and white ash. Red cedar, chestnut, hickory, white oak, hard maple, beach, and sycamore fail.

Evergreens: Red and white cedar have been tried, and fail. In localities, some of the pines succeed.

ORNAMENTALS.

Trees successfully introduced: Catalpa, ailanthus, Lombardy poplar, and weeping willow. Roses: Hybrid perpetuals and climbing classes succeed. Ornamental or other hedges are made with the Osage orange.

Lawns: Kentucky blue-grass is not a satisfactory success.

Many of our people are surrounding their homes with trees, shrubs and flowers.

REPUBLIC COUNTY.

BY J. A. MOSHER, BELLEVILLE.

FRUITS.

The present condition of orchards of all classes, good. No perceptible injury has occurred from the high temperature of the past autumn. The extent of orchard planting: Apple and peach, extensive; pear and plum, very limited; cherry, large. Varieties planted largely:

Apples: Ben Davis, Winesap, Rawles Genet, Dominie, Stark, Jonathan, Pennock, Yellow Bellflower, McAfee's Nonsuch, Maiden's Blush, Fameuse, Red Astrachan, Carolina Red June, Cooper's Early White. *Peaches:* Amsden's June, Hale's Early, Crawford's Early and Late, Alexander, Early Rivers, Large Early York, Old Mixon Free and Cling, Heath Cling. *Pears:* Bartlett, Flemish Beauty. *Plums:* Wild Goose, Miner, Lombard. *Cherries:* Early Richmond.

Failures of planting: Pear and cherry—Many from weak condition of trees.

Wood growth: All classes exceedingly large, excepting the cherry, which was rather small.

The present indications for a crop of fruit in 1880: Apples, peaches, cherries, plums, grapes, strawberries, blackberries, raspberries, good; pears, currants and gooseberries, poor.

Quince has been tried; result rather poor.

Mulching for small fruits is good.

Varieties of small fruits planted: Strawberry—Prouty's Seedling, Crescent Seedling, Star of the West, promising. Blackberry—Snyder, Taylor's Prolific, Western Triumph, all fine; Branton's Early, poor. Currants—LaVersailles, White Grape, Red Dutch, Cherry; Cherry and White Grape most satisfactory. Gooseberry—Houghton and Downing succeed. Raspberry—Gregg, Turner, Thwack, fine varieties; Highland, Hardy, Brandywine, good; Golden Cap, Herstine, plants tender.

New seedling fruits, Kansas origin: Peach, promising variety; plum, promising variety.

Pruning the grape and small fruits: Grape-vines—In November, cut out and shorten-in heavily, in proportion to the extent of wood growth. Raspberry and blackberry—Shorten the growth in summer.

Nut-bearing trees: Black walnut is cultivated.

Pawpaw and persimmon are cultivated.

FORESTRY.

Varieties successfully introduced: Birch, beach, catalpa (speciosa), American larch, and white poplar.

Varieties successfully cultivated in artificial forests, groves and belts: Cottonwood, honey locust, box elder, soft maple, oak, black walnut, red and white elm, hackberry, sycamore, blue and gray ash.

Varieties planted and generally fail: European mountain ash, European larch, white willow, Lombardy and white poplar, American chestnut.

Evergreens successfully planted: Red cedar, Norway spruce, white, Scotch, black Austrian and Norway pines, balsam fir, and arbor vitæ.

ORNAMENTALS.

The following trees and shrubs have been successfully planted: Golden dwarf peach, maples, weeping willows, oak-leafed mountain ash, lilacs, and snowball.

For lawns, Kentucky blue-grass and white clover succeed finely. A disposition to beautify the home surroundings with lawns, trees and flowers is manifest.

RICE COUNTY.

BY J. B. SCHLICHTER, STERLING.

FRUITS.

The present condition of orchards: Apple, fair, excepting the planting of 1879, which suffered from dry weather. All other classes are in good condition. Do not discover any material injury resulting from the high temperature of the past autumn. The orchard planting of 1879 was large of all classes of fruit trees, but the unfavorable season caused nine-tenths of them to fail.

The wood growth was good in orchards properly cultivated.

The present indications for a crop of fruit in 1880 are favorable for a large crop of all classes, excepting blackberries, gooseberries and raspberries, which promise an average crop.

Mulching of small fruits has been beneficial.

New fruits: The Snyder blackberry has been planted, and is doing well.

New seedling fruit of Kansas origin: Peaches—Several seedlings which have borne fruit when all others were killed by frosts. Plums—Varieties of the Sand, equal to the Wild Goose. Currant—Native, promising.

Rust appeared on the grape leaves. It occurs during dry, hot weather.

Management of grapes and small fruits: I grow grapes in a low bush form; also, gooseberry. Blackberry and raspberry—Nip the ends of the canes, when grown two or three feet high.

Nut-bearing trees: The black walnut is grown quite extensively.

The Russian mulberry is cultivated, and is said to fruit at three years.

FORESTRY.

Varieties successfully introduced: Soft maple, catalpa, ailanthus, coffee bean, honey and black locust, abele, sycamore.

Varieties successfully used for forests, groves, and belts: Ash, walnut, box elder, cottonwood, elm, soft maple, hackberry, ailanthus, and catalpa.

The chestnut, larch and buckeye generally fail.

Evergreens: Red cedar and black Austrian pine succeed. There is an arbor vitæ hedge in Sterling which has succeeded the past two years.

Insects: Cottonwood trees in some localities are defoliated by a small, green worm, about an inch long and one-eighth of an inch in diameter, a little tapering at each end.

ORNAMENTALS.

Ornamental trees and shrubs successfully introduced: Trees—Tulip tree, weeping willow. Shrubs—Dwarf lilac, double flowering almond. Climbers—Trumpet creeper, honeysuckle.

Herbaceous plants successfully grown: Tuberose, gladiolus, yucca, tiger lily, dahlias.

Kentucky blue-grass has been tried. Do not know of only one plat.

The people truly desire to ornament home surroundings, and are doing so as fast as they are able to meet the expenses.

RILEY COUNTY.

BY PROF. E. A. POPENOE, MANHATTAN.

FRUITS.

The present condition of orchard trees, of all classes, is promising. Do not discover any material injury to fruit trees, resulting from the high temperature of the past autumn.

The extent of orchard planting was greater than in previous seasons. Varieties planted largely:

Apple: Winesap, Ben Davis, Missouri-Pippin, Rawles Genet, Fameuse, Maiden's Blush, Red Astrachan, Early Harvest, Carolina Red June, Bailey's Sweet, Rambo. *Peaches:* Hale's Early, Crawford's Early and Late, Stump-the-World, Heath Cling, Alexander, Amsden's June. *Pears:* Bartlett, Flemish Beauty, Clapp's Favorite, Seckel, Howell. *Plums:* Wild Goose. *Cherries:* Early Richmond, English Morello.

The failures were comparatively few. Cause of failure: Low temperature of the winter of 1878-9.

Wood growth: Apple, pear, plum, cherry, good, on young trees; rather short on old ones; peach, good, on trees not injured by frost the preceding year.

Present indications for a crop of fruit in 1880: Apples, excellent; peaches, a few fruit beds are killed; cherries, promising; grapes, promising.

Quince—a few trees have borne fruit; very few are planted.

Mulching and shading some of the small fruits afford excellent results.

New seedling fruits of Kansas origin: Peaches, several fine varieties; plums, wild seedling promising.

Nut-bearing trees: Hard-shelled almond, black walnut, chestnut, shell-bark hickory.

The barberry, white mulberry, persimmon and serviceberry (amelanchier) are cultivated as ornamentals.

FORESTRY.

Catalpa and ailanthus have been successfully introduced.

Varieties successfully cultivated in artificial forests, groves, and belts: Black walnut, ailanthus, soft maple, box elder, cottonwood, honey locust, red cedar. Hard maple generally fails.

Evergreens: Red cedar and several pines have been successfully planted.

Insects: Black locust is killed by the borer, (*clytus Robinia;*) ailanthus and some apple trees are infested to some extent by twig pruner, (*Elaphidion,* species not determined.)

ORNAMENTALS.

Lilacs, common and Persian, dwarf almond, barberry, Japan quince, Tartarian honeysuckle, tamarix, spireas, syringa, rose acacia, altheas, weigelia.

ROOKS COUNTY.

BY J. F. MULLANEY, STOCKTON.

FRUITS.

The present condition of orchards: Apple, peach and plum, fine. No injury discovered from the high temperature of the past autumn.

Extent of orchard planting: Apple, about 4,000 trees; peach, about 12,000 trees; plum, about 8,000 trees.

Failures in plantings, very small.

Wood growth: Less than an average of other years of all classes.

Present indications for a crop of fruit in 1880, of such trees and plants as are of fruiting age, good.

Quince has not been tried.

Mulching of small fruits is profitable, and very necessary.

Nut-bearing trees cultivated: Hickory, chestnut, and beech.

FORESTRY.

Varieties introduced: Ash, hickory, cottonwood, poplar, and maple.

Varieties successfully cultivated in artificial forests, groves, and belts: Ash, cottonwood, poplar, and maple. Oak and evergreens generally *fail.* Red cedar is indigenous to this locality. One-half the number generally fails in transplanting.

RUSSELL COUNTY.

BY W. A. LEWIS, RUSSELL, AND J. B. CORBETT, BUNKER HILL.

FRUITS.

Present condition of orchards: Apple, peach, pear, plum, cherry, good. Cannot discover any material injury to trees resulting from the high temperature of the past autumn.

The extent of orchard planting was a large increase on that of 1878. Varieties planted:

Apple: Winesap, Ben Davis, Missouri Pippin, Maiden's Blush, Early Harvest, Keswick Codlin, Lowell, Red Astrachan, Fourth of July, Sweet Bough, Early Pennock, Fameuse, Autumn Strawberry, Colvert, Jersey Sweet, Milam, Minkler, Lawver, Grimes's Golden, Wagener, English Russet, King, Fallawater. *Peach:* Stump-the-World, Crawford's Early and Late, Large Early York, Amsden's June, Blood Clingstone. *Pear:* Flemish Beauty, Sheldon, Lawrence, Madeleine, Bartlett, Seckel, Duchesse d'Angouleme. *Plum:* Huling's Superb, Imperial Gage, Washington, Columbia, natives (the Sand and others), Coe's Golden Drop, Duane Purple, Yellow Egg. *Cherry:* Early Richmond, Common Morello.

Failures in planting: Apple, about 15 per cent.; peach, about 20 per cent.; pear, about 20 per cent.; plum, about, 10 per cent.; cherry, about 15 per cent.

Causes of failure: Dry weather in 1879, poor care, and bad condition of tree when planted.

Wood growth: Apple, fair; peach, medium; pear, plum, cherry, good.

Present indications for a crop of fruit in 1880: Apples, a few trees will come into bearing in 1880; peaches, good; pears, trees too young to fruit; plums, good; cherries, good; grapes, fair; strawberries, fair; blackberries, good; currants, good, but few planted; gooseberries, fair; raspberries, good.

Mulching of small fruits: All small fruits are a success, when well mulched, and currants must be shaded also, to succeed.

Rust: The Kittatinny blackberry was badly affected in some localities. Plants were set in the spring of 1879, on fine, old ground, heavily manured.

Management of grape-vines and small fruits: Train grape-vines to stakes, after the California style. Blackberry and raspberry also train to stakes, clip the tips of canes, in growing season, at about three feet, and pinch back the laterals at one foot from the main stalk. Currants, allow to grow as bushy as inclined.

Nut-bearing trees: A few chestnut and butternut were planted last season.

FORESTRY.

Varieties successfully introduced: Soft and hard maple, silver-leafed and Lombardy poplar, ailanthus, honey locust, white and golden willow.

Varieties successfully cultivated in artificial forests, groves, and belts: Soft and hard maple, ailanthus, cottonwoods, box elder, honey locust, silver-leafed and Lombardy poplar, white and golden willow, walnut, catalpa. Chestnut and hickory fail.

Evergreens: Red cedar is a native, and easily grown; arbor vitæ and Norway spruce succeed if sheltered from the sun the first season.

ORNAMENTALS.

Weeping willow, flowering almond and syringa have been successfully introduced.

Ornamental hedge: The American arbor vitæ succeeds tolerably well.

SALINE COUNTY.

BY H. A. NORTHRUP, SALINA.

FRUITS.

The present condition of orchards of all classes, *good.* No apparent injury resulted from the high temperature of the past autumn.

Extent of orchard planting: Apple and pear, large; cherry, moderate; peach and plum, light. Varieties largely planted:

Apple: Missouri Pippin, Ben Davis and Winesap, preferred in order named. *Peach:* The newly-introduced and high-priced varieties. *Cherry:* Early Richmond, English Morello.

Wood growth: Apple light, peach heavy.

The present indications for a crop of fruit in 1880: Apples and peaches, very good; pears, cherries, grapes, strawberries, blackberries, gooseberries, and raspberries, good.

Quince succeeds in growth — not of bearing age yet.

Mulch the rows and cultivate between, is the most successful mode of treatment for small fruits. Tree-shading of small fruits: A failure.

New varieties of small fruits, planted: Strawberry — Crescent Seedling, Capt. Jack, and Sharpless. Raspberry — Brandywine, Highland Hardy, Herstine, Bristol, Turner, Ganargua.

Pruning of the grape-vine and small fruits: Grape-vines in mild winter weather, leaving only two canes and two or three buds for fruiting on each lateral; train to stakes. Blackberry and raspberry, in summer, train into hedge form.

Nut-bearing trees cultivated: The black walnut. Mulberry trees are cultivated in small numbers.

FORESTRY.

Varieties successfully introduced: Soft maple and Lombardy poplar.

Varieties successfully cultivated in artificial forests, groves and belts: The above, with all classes of native forest trees. The ailanthus tree fails in this section. The red cedar succeeds.

Lawns: Kentucky blue-grass succeeds for such purposes in some localities.

There is an increasing disposition to plant ornamentals.

SEDGWICK COUNTY.

BY WM. M'CRACKEN, SUNNY DALE; J. G. SAMPSON, EL PASO.

FRUITS.

The present condition of orchards of all classes of fruit is good, excepting the peach, which in a few instances is injured.

Do not discover any injury among fruit trees occurring from the high temperature of the past autumn.

The extent of orchard planting was an increase of 20 per cent. of other years. Varieties planted largely:

Apple: Ben Davis, Missouri Pippin, Winesap, Gilpin, Maiden's Blush, Early Harvest. *Peach:* Largely of early varieties, as Amsden's June, Hale's Early, and Crawford's Early. *Pear:* Bartlett, and the well-known varieties. *Plum:* Wild Goose, Chickasaw. *Cherry:* Early Richmond, Morello and Duke varieties.

Failures in plantings, not more than 10 per cent. Causes of failure: Dry weather, and late spring frost.

The wood growth was fine of all classes, excepting the peach.

Present indications for a crop of fruit in 1880 are good for all classes.

Quinces have been tried, and succeed in special localities where the ground continuous moist.

Mulching is beneficial to small fruits.

New varieties of small fruit introduced: Blackberry — Snyder.

New seedling fruit of Kansas origin: Peach, several promising varieties.

Pruning grapes and small fruits: Grapes should be pruned in February, cutting back the wood of the preceding year to two or three buds, and tie up to trellis; gooseberry, prune in spring; raspberry should have one-third of the cane cut back when heavily grown; very little trimming is done among raspberry or blackberry plantations.

Nut-bearing trees: Black and white walnut are cultivated.

A few persimmon trees, serviceberry and mulberry are cultivated.

FORESTRY.

Varieties of trees successfully introduced: Black locust, white willow, white ash, soft maple, catalpa, silver-leafed poplar.

Varieties of trees successfully grown for artificial forests, groves, and belts: Cottonwood, box elder, soft maple, white willow, walnut, elm, locust. Chestnut, Lombardy poplar, mountain ash, hickory and oak fail.

Red cedar and some of the pines have been successfully planted. Balsam fir fails.

ORNAMENTALS.

Trees and shrubs successfully introduced: Trees — Silver-leafed poplar, catalpa, American weeping willow, red cedar, Norway spruce. Shrubs — Tamarix, althea, lilacs, Japan quince, weigelia, flowering almond, syringa, spirea, snowball. Roses — Most of the hardy classes succeed.

Lawns: Kentucky blue-grass and white clover are only partially a success.

There is quite a taste manifested for home adornment by the people.

SEQUOYAH COUNTY.

BY JOHN B. PRESCOTT, PIERCEVILLE.

FRUITS.

Very few fruit trees have been planted in this county, and none prior to 1879. Those who planted then, felt very little confidence in succeeding. A great effort was made to make what few trees were planted live; but a small proportion were saved. It is not probable that much will be done in 1880, except with seeds, as very little confidence is felt in transplanting trees.

SHAWNEE COUNTY.

BY THOMAS BUCKMAN, TOPEKA.

FRUITS.

The present condition of orchards, of all classes planted, is good, excepting old peach trees, which are damaged. Do not discover any injury resulting from the high temperature of the past autumn.

The extent of orchard planting: Apple trees, 19,130; peach, 7,677; pear, 934; plum, 906; cherry, 2,089. Varieties most largely planted:

Apple: Smith's Cider, Winesap, Missouri Pippin, Ben Davis. *Peach:* Amsden's June, mostly. *Pear:* Bartlett, Seckel. *Plum:* Wild Goose, Sand. *Cherry:* Early and Late Richmond, and English Morello.

Failures in plantings: Apples, cherries, peach, pear, and plum, heavily. Cause of failure: Low temperature of the winter of 1878 and 1879.

Wood growth of all classes, good.

Present indications are favorable for a good crop of fruit of all classes in 1880.

Quince: All efforts to succeed failed.

New seedling fruit of Kansas origin: Raspberry—Some of the native varieties have been cultivated, and produce good crops of fine fruit.

Pruning of grape-vines and small fruits: Prune grapes in February, leaving only two or three fruit buds on each shoot. Blackberries and raspberries—Cut the main canes back to two and one-half feet, and the lateral growth to twelve or sixteen inches from main cane. Thin out gooseberries to a few stalks.

Nut-bearing trees: All efforts to cultivate the chestnut have failed.

All efforts to cultivate the mulberry have failed.

FORESTRY.

Varieties of trees successfully cultivated in artificial forests, groves, and belts: Black walnut, cottonwood, soft maple, Lombardy poplar, white ash. Hard maple fails.

Evergreens: Red cedar and black Austrian pine have been successfully planted.

Insects: The black locust has failed from the attacks of borers.

ORNAMENTALS.

Black Austrian pine, red cedar, almond (double flowering), althea, snowball, sweet-scented shrub (calacanthus) and mock orange have been successfully introduced.

Lawns: Kentucky blue-grass and white clover have been successfully used.

SUMNER COUNTY.

BY A. C. SMITH, WELLINGTON.

FRUITS.

The present condition of orchards, of all classes planted, is good. No injury occurred from the high temperature of the past autumn, with the exception of sun-scald of some few of the tender varieties of apples.

The extent of orchard planting was equal to any previous year. Varieties largely planted:

Apple: Ben Davis, Missouri Pippin, Rawles Genet, Rome Beauty, Rambo, Maiden's Blush, and Winesap. *Peach:* Alexander, and Amsden's June. *Plum:* Wild Goose. *Cherry:* Early Richmond.

Wood growth was fair on young trees, and light on old ones.

Present indications are first-rate for a crop of fruit of all classes in 1880.

Quince: Have a few bearing; think it will succeed with care.

Grape, prune during winter; blackberry canes, clip off the ends in growing season as soon as they reach two feet high.

FORESTRY.

Varieties successfully introduced: Soft maple, and catalpa.

Successfully cultivated in artificial forests, groves and belts: Soft maple, catalpa, black walnut, white ash, cottonwood, box elder. Chestnut has generally failed.

Evergreens: Red cedar has not been planted. Arbor vitæ (or white cedar) and Norway spruce succeed.

Insects: Borers destroy the box elder.

Roses: All classes succeed, so far as tried.

Lawns: Kentucky blue-grass and white clover succeed for lawn purposes.

TREGO COUNTY.

BY ARTHUR BAILEY, WA-KEENEY.

FRUITS.

The present condition of orchards: Apple (none over one year in the county planted), good; peach, fair; plum (native varieties transplanted), good; pear and cherry, none reported. No injury is apparent, resulting from the high temperature of the past autumn.

Failures in plantings, light. Causes: Neglect.

The strawberry and blackberry indicate a good crop of fruit in 1880.

Mulching is indispensable in this section, to secure success.

Grape culture promises to be successful.

FORESTRY.

Varieties successfully planted: White ash, ailanthus, box elder, catalpa, honey locust, white maple, Osage orange, and red bud. Red cedar has been successfully transplanted from the lands along the streams in this county.

No attempts as yet have been made to construct lawns. There is a manifest desire among the people to ornament the home surroundings.

WABAUNSEE COUNTY.

BY ABNER ALLEN, WABAUNSEE, AND H. A. STILES, PAVILION.

FRUITS.

The present condition of orchards, of all classes of fruit, is good. The high temperature of the past autumn injured peach trees only, and that was confined to the fruit buds, a small portion of which were winter-killed. The varieties planted largely:

Apple: Ben Davis, Winesap, Rawles Genet, Missouri Pippin, Grimes's Golden, Huntsman's Favorite, Gilpin, Willow Twig, Maiden's Blush, Jonathan, Gramar Pearmain, Wine, Dominie, Swaar, Smith's Cider, Talman's Sweet, Rome Beauty, Lady Apple, Carolina Red June. *Peach:* Amsden's June, Hale's Early, Alexander, Troth's Early, Briggs's Early, Red May, Heath Cling, Stump-the-World. *Pear:* Bartlett, Duchesse d'Angouleme, Beurre d'Anjou, Beurre d'Aremberg, Vicar of Winkfield, Flemish Beauty, Howell, Belle Lucrative, Clapp's Favorite, Louise Bonne de Jersey. *Plum:* Wild Goose, Miner, Chickasaw. *Cherry:* Early Richmond, English Morello, Belle Magnifique.

Failures in planting: Apple, pear, plum, cherry and peach, very light. Causes of failure: Unfavorable climatic conditions, occurring in 1878 and 1879, and late planting.

Wood growth of 1879: Apple, pear, plum, cherry and peach, fair.

The present indications for a crop of fruit in 1880: Very fine for all classes.

New seedling fruit of Kansas origin: Apple and peach, several promising varieties; raspberry, some native varieties very promising.

The quince has been tried, and winter-kills.

Mulching and shading small fruits, beneficial; currants only require shade; gooseberries thrive best in an open border; well-rotted manure or compost forms the best mulch for small fruits, excepting the strawberry.

New varieties of small fruits introduced: Strawberry — Capt. Jack, promising. Gooseberry — Smith's Improved, Early Kent. Raspberry — Gregg.

Rust appeared the past year in some localities on the raspberry leaves.

Cause: Observations lead me to suspect the little fly that is found on purslane plants, is the cause of the disease. Remedy: I have used smoke to drive them away from the plants. (Abner Allen.)

Pruning the grape-vine and small fruits: Grapes should be pruned soon after the leaves drop, cutting out two-thirds of the new wood. Raspberries and blackberries—Trim in spring; cut the canes back to two or three feet, according to strength of growth. Gooseberries—Remove one-third of the wood.

Nut-bearing trees: Chestnut, pecan, hickory and English walnut have been cultivated to a limited extent.

Mulberry, pawpaw, native persimmon, buffalo-berry, barberry and serviceberry have been planted.

FORESTRY.

The wafer ash and Osage orange have been successfully introduced.

Varieties successfully cultivated in artificial forests, groves, and belts: Native oaks, ash, red and white elm, walnut, soft maple, box elder, honey locust, catalpa, cottonwood. Black locust generally fails.

Evergreens: Red cedar, Scotch, black Austrian and mountain pines. Norway spruce and Irish juniper succeed.

Insects: Maple worms injure the soft maple, and borers destroy the black locust.

ORNAMENTALS.

Shrubs successfully introduced: Japan quince, snowball, mock orange, rose acacia, Persian lilacs, sumach, and Siberian crabs.

Roses: Moss, damask, hybrid perpetual and climbing classes succeed. Ornamental hedge: Roses.

Lawns: Kentucky blue-grass and white clover succeed, excepting on sandy land.

There is a decided interest felt in the subject of home adornment, and some of the most attractive lawns and flower gardens can be found in this county.

WASHINGTON COUNTY.

BY DR. CHARLES WILLIAMSON, WASHINGTON.

FRUITS.

The present condition of orchards of all classes of fruit good. No apparent injury resulted from the high temperature of the past autumn.

Extent of orchard planting: Apple, cherry and peach larger than usual; pear and plum rather small. Varieties planted largely:

Apple: Early Harvest, Carolina Red June, Primate, Keswick Codlin, Ben Davis, Winesap, Willow Twig, Missouri Pippin, Rawles Genet, Pearmain. *Peach:* Hale's Early, Crawford's Early, Crawford's Late, George the Fourth, and seedlings. *Pear:* Bartlett, Duchesse d'Angouleme, Seckel. *Plum:* Miner, Chickasaw. *Cherry:* May Duke, Early Richmond.

Failures in planting: Apple, pear and cherry, none; peach, light; plum, wholly.

Wood growth was good to very good of all classes.

The present indications for a crop of fruit in 1880: Apples and peaches, very good; pear and plum, uncertain; all other classes, good.

The quince has not been thoroughly tried.

Mulching of small fruits indispensable to success.

New varieties of small fruits planted: Blackberry—Snyder.

New seedling fruits of Kansas origin worthy of propagation: Peach, several promising varieties; blackberry, Indian; raspberry, several promising varieties.

Pruning of the grape should be light. Blackberry and raspberry—Cut out all but three canes, and head them to four and one-half feet, and the lateral growth to two feet. Gooseberry—Train two shoots to a tree form. Currant—Leave only three shoots; cultivate in hills; cultivate in early spring, and mulch thereafter.

Miscellaneous fruits: Barberry and mulberry do well under cultivation; persimmon, killed by winter.

FORESTRY.

Varieties successfully introduced: Ailanthus, catalpa.

Varieties of trees successfully cultivated in artificial forests, groves and belts: Red cedar, butternut, cottonwood, white maple, all the poplars, walnut.

Evergreens: The red cedar is the only variety that escapes the hateful locust's jaws, and endures all kinds of seasons.

ORNAMENTALS.

Trees and shrubs successfully introduced: Ailanthus, catalpa, lilac, snowball, honeysuckle, roses. This county is remarkably adapted to the success of all classes of ornamentals.

Ornamental hedges: Barberry, gooseberry, plum and Osage orange are successful.

Lawns: Kentucky blue-grass and white clover succeed.

There is manifest quite an interest in home ornamentation with lawns, trees, and flowers.

WILSON COUNTY.

BY G. B. BROWN, GUILFORD.

FRUITS.

The present condition of orchards: Apple, plum and cherry, good; pear, grown in grass, look well; peach, where cultivated, are in good condition. Varieties largely planted:

Apple: Early Harvest, Red Astrachan, Maiden's Blush, Rambo, Jonathan, White Winter Pearmain, Missouri Pippin, Rawles Genet, Winesap, Ben Davis. *Peach:* Hale's Early, Crawford's Early, Early York, Druid Hill. *Pear:* Bartlett, Seckel, Howell, Duchesse d'Angouleme, Beurre d'Anjou, Osband's Summer. *Plum:* Wild Goose, Washington, Lombard, Duane's Purple. *Cherry:* Early Richmond, English Morello.

Failure in planting very light, excepting pear and cherry, which was fifty per cent. Cause: Unfavorable weather following the planting season.

Present indications are for a good crop in 1880 of all classes, excepting the currant.

Quinces have not been sufficiently tried to reach conclusions. The trees planted on high land grow finely.

Mulching has been an advantage used during July and August. Thorough cultivation in the fore part of the season is better.

Pruning: With the grape, the spur system has been successful; raspberry, cut back the canes one-third in winter, and remove all weak canes.

FORESTRY.

Varieties successfully planted in artificial forests, groves and belts: Maple, walnut.

Evergreens: Red cedar, black Austrian, Scotch and white pine are successfully planted.

Insects: Maple worm and borers injure the trees.

Ornamental hedge: Privet succeeds.

WOODSON COUNTY.

BY W. W. SMITH, NEOSHO FALLS.

FRUITS.

Present condition of orchards in this county: Apple, pear, and plum, fine; peach and cherry, young trees, fine; old trees mostly killed by the winter of 1878–9. Do not discover any injury resulting from the high temperature of the past autumn.

The extent of orchard planting was large of all classes of trees. Varieties planted largely:

Apple: Stark, Winesap, Missouri Pippin. *Peach:* Hale's Early, Crawford's Early and Late. *Pear:* Bartlett. *Plum:* Wild Goose. *Cherry:* Early Richmond, May Duke.

Failures in plantings: Owing to unfavorable weather in June, an unusual number of trees failed.

Wood growth: Apple, peach, and cherry, poor; pear and plum, fair.

Present indications for a crop of fruit in 1880: Apples, pears, plums, grapes, blackberries, currants, gooseberries, raspberries, *good;* peaches, *very good;* cherries, *poor;* strawberries, *fair.*

The quince has been tried, and, under the same care as given the apple, is fully as successful.

Mulching and shading essential, with currants; good cultivation of the ground is better for other small fruits.

New seedling fruit, Kansas origin: Peach, a fine variety.

Pruning of the grape and small fruits: Grape vines should be shortened-in during winter and early spring. Blackberry canes, pinched in during the growing season to encourage a lateral growth.

Nut-bearing trees: Black walnut succeeds in tree and product; chestnut, in tree.

Barberry, mulberry and persimmon have been successfully cultivated.

FORESTRY.

Varieties successfully introduced: Black locust, catalpa, and birch.

Varieties successfully cultivated in artificial forests, groves, and belts: Soft maple and cottonwood. All native forest trees succeed, planted on the prairie.

Evergreens: Red cedar has been largely and successfully transplanted; White pine and Norway spruce transplant successfully, and grow rapidly; arbor vitæ, Scotch and black Austrian pine do not bear transplanting as well, but grow well after the first year.

Insects: Maple worms defoliate the soft maple, and borers injure the black locust.

ORNAMENTALS.

Trees: Ailanthus, black locust, catalpa, abele, balm of Gilead, Lombardy poplar, red birch.

Shrubs: Spireas, lilacs, snowball, tamarix, Japan quince, weigelia, acacia rosea.

Roses: Most of the classes succeed. Moss—Salet, White Perpetual. Hybrid China—Louis Phillippe. Hybrid Perpetual—Giant of Battles, Gen. Washington. Climbing—Queen of the Prairie, Ozark, Ayrshire, are the most desirable varieties.

Lawns: Kentucky blue-grass succeeds for such purposes.

Most of the people manifest a taste and desire to beautify home surroundings with lawns, etc.

WYANDOTTE COUNTY.

BY W. W. DICKINSON, QUINDARO.

FRUITS.

The present condition of orchards: Apples, excellent, with the exception of the late-ripening winter varieties, which look rather poorly; peach, poor; pear and plum, fair; cherry, excellent.

No injury is apparent in any of the classes, occurring from the high temperature of the past autumn, excepting the peach, the buds of which are shrunken.

The extent of orchard planting was probably equal to previous years. Varieties largely planted:

Apple: Ben Davis, Rawles Genet, Winesap, Rambo, Early Harvest. *Peach:* Wyandotte Chief. *Cherry:* May Duke, Early Richmond.

Failures in planting: Apple, rather greater than usual; cherry, very light. Cause: Extreme cold of the winter of 1878–9.

Wood growth: Short, heavy, and few laterals.

The present indications for a crop of fruit in 1880: Apple, early ripening sorts, fair; cherries and grapes, a full crop; strawberries and blackberries, good where well mulched; currants and gooseberries, doubtful; raspberries, good where the canes were well cut back.

Quince has been tried, with poor results.

Mulching and shading have been very beneficial in some cases, and in others causing a loss of the entire crop by the mulch forming a harbor and protection for moles and mice.

New seedling fruit of Kansas origin: Apple, valuable variety—Hart's Seedling; peach, valuable varieties—Wyandotte Chief, Bates's Seedling.

Rust has appeared to limited extent on exhausted, also rich neglected soils. Remedy: A moderate mulch for poor soil, and clean cultivation for rich.

Pruning grape-vines and small fruits: Grape, in February, cutting back to two or three buds on last year's wood; raspberry, cut out old wood in early spring, and cut well back the growing cane after the fruit has ripened; gooseberry and currant, thin out at the bottom and cut off all weak shoots in early spring.

Nut-bearing trees: Chestnut and butternut are cultivated.

Barberry, mulberry and persimmon are cultivated to a limited extent. The first is found growing wild in this locality.

FORESTRY.

This being a timbered county, all varieties common to the latitude thrive.

Varieties successfully cultivated in artificial forests, groves and belts: Cottonwood, locust, soft maple, sycamore.

Evergreens: Most varieties of the pines, spruces and cedars have been planted, with fair success.

Insects: Hickory and black locust are affected by borers.

Roses: Most varieties of the several classes succeed in this locality.

ORNAMENTALS.

Lawns: Kentucky blue-grass and white clover succeed.

A love for beautiful home surroundings prevails among the people of this county.

COUNTY STATISTICS.

COUNTIES.	TABLE SHOWING THE NUMBER OF BEARING TREES.					TABLE SHOWING THE NUMBER OF TREES NOT IN BEARING.					*Acres in small fruits.*	*Acres in vineyards...*
	Apple...	*Peach...*	*Pear....*	*Plum ...*	*Cherry..*	*Apple...*	*Peach...*	*Pear....*	*Plum ...*	*Cherry..*		
Allen	32,342	64,964	1,823	1,211	18,589	68,137	45,986	1,983	2,404	14,181	....	41.50
Anderson	87,883	58,974	925	2,327	11,487	55,610	25,794	1,680	1,657	7,674	....	28.00
Atchison	51,017	66,177	1,447	947	16,247	72,197	18,311	1,588	648	5,700	137.00	206.00
Barbour*	77	120	....	3	36	1,644	4,532	208	39	232	....	1.00
Barton*	203	3,117	184	1,872	885	40,692	70,309	1,949	4,847	6,622	....	12.00
Bourbon	98,492	102,549	1,941	1,798	25,278	114,853	25,112	5,474	2,300	22,817	186.00	73.38
Brown	47,838	189,931	367	1,665	12,445	101,331	58,618	2,226	2,424	10,084	57.00	63.00
Butler	10,078	243,493	543	8,146	7,362	97,727	213,714	4,196	6,583	25,188	93.95	33.81
Chautauqua	14,519	125,265	289	1,887	3,615	53,965	58,252	2,360	3,586	9,261	36.31	73.50
Chase	4,646	27,688	746	2,049	2,183	21,630	19,225	1,109	674	3,872	....	4.53
Cherokee	100,587	98,406	2,646	2,884	23,363	140,617	35,515	4,975	3,730	20,742	....	71.12
Clay	1,671	37,974	70	1,926	476	17,669	40,565	384	2,753	4,035	14.00	3.50
Cloud	2,656	68,492	512	3,069	2,335	24,289	89,464	1,204	4,976	8,542	95.00	16.00
Coffey	43,827	83,084	705	4,333	14,976	79,409	29,639	2,055	2,706	12,705	....	37.50
Cowley	12,807	220,915	838	15,161	5,458	84,606	176,003	2,996	4,906	15,511	....	34.25
Crawford	50,862	62,383	1,017	1,338	18,181	116,322	51,564	3,769	3,232	18,566	161.00	60.00
Davis	4,033	33,945	616	2,436	2,151	18,372	40,074	1,289	1,186	4,969	23.00	13.00
Dickinson	4,604	158,457	609	6,990	2,826	55,913	155,358	2,635	10,327	18,221	108.00	23.00
Doniphan	59,982	67,606	907	1,429	10,990	101,597	88,859	1,177	1,912	4,750	....	....
Douglas	140,557	61,040	7,283	3,204	28,879	75,576	17,899	3,033	1,079	7,603	179.00	220.25
Edwards*	25	500	....	....	....	5,417	7,213	565	503	564	....	194.25
Elk	12,029	145,949	225	2,147	3,912	55,104	65,904	1,485	2,145	9,684	84.18	50.12
Ellsworth	459	4,715	156	108	275	12,670	30,259	1,061	3,413	1,755	39.91	18.00
Ford	300	250	175	75	90	4,000	3,000	2,100	1,500	1,200	20.00	15.00
Franklin	83,470	71,975	1,997	2,722	21,593	67,748	32,365	2,940	2,620	10,984	95.99	89.74
Greenwood	17,971	90,981	1,928	1,092	7,141	57,517	64,479	1,928	2,500	12,834	....	34.00
Harper*	20	167	....	8	25	5,112	13,410	200	257	645	....	2.83
Harvey	89,779	79,570	591	3,684	2,974	173,700	93,271	2,610	6,542	11,969	83.25	22.50
Jackson	40,759	67,276	558	995	10,635	74,765	18,619	1,866	1,097	6,549	33.40	14.48
Jefferson	61,690	84,896	1,715	1,653	21,909	68,524	29,847	2,407	1,046	9,805	34.10	49.15
Jewell	942	53,611	389	5,300	926	38,613	81,168	3,756	7,821	6,182	....	5.25
Johnson	89,959	73,447	2,302	2,999	30,457	68,344	35,930	3,351	3,111	17,482	....	140.75
Kingman	....	....	....	....	20	6,923	12,016	155	1,339	749	15.50	1.00
Labette	91,168	126,782	2,697	3,181	12,508	145,116	57,142	8,395	5,339	20,398	....	77.00
Leavenworth	116,354	77,886	4,766	1,962	20,488	89,778	22,989	2,449	1,776	10,483	....	203.75
Lincoln	1,606	10,211	80	199	274	18,139	25,592	1,130	1,231	1,637	....	6.00
Linn	77,152	85,599	1,603	3,351	25,687	96,700	26,428	2,619	2,116	10,575	....	27.50
Lyon	42,530	108,039	1,643	1,905	16,429	126,405	65,569	4,056	3,188	16,383	125.00	49.00
Marion*	1,539	53,298	37	799	1,508	42,807	115,745	1,413	5,560	14,017	....	6.25
Marshall	24,851	87,464	431	571	6,629	43,960	89,095	2,298	1,321	10,783	....	....
McPherson	640	55,444	362	2,909	1,185	53,548	126,150	2,256	6,797	11,575	117.00	143.87
Miami	78,995	68,546	1,556	2,662	27,098	100,621	26,042	2,965	2,427	13,105	90.87	62.87
Mitchell	2,479	47,489	131	3,465	2,216	40,154	90,132	3,504	5,052	7,626	....	6.91
Montgomery	68,261	195,062	847	3,019	14,802	132,714	55,491	3,943	5,419	16,427	192.00	219.00
Morris	3,133	41,053	149	1,620	2,479	24,179	25,323	1,135	2,979	5,183	7.75	3.13
Nemaha	19,953	61,765	758	571	6,015	63,186	37,097	1,403	1,054	10,115	54.18	45.26
Neosho	39,840	142,588	615	1,831	12,698	124,598	67,666	3,147	10,122	25,971	....	58.00
Norton	....	260	....	....	....	2,094	2,384	824	25	102	....	....
Osage	40,045	107,602	1,009	2,062	14,027	91,258	46,334	1,955	2,270	15,474	....	49.05
Osborne	736	5,783	25	5,905	242	24,004	41,226	999	3,789	1,158	....	50.00
Ottawa	1,269	44,028	102	673	879	19,632	58,772	1,436	2,545	4,548	37.87	2.25
Pawnee	39	3,710	14	1,528	411	17,982	40,119	1,849	7,132	2,754	1.50	4.50
Phillips*	183	2,734	6	380	945	13,768	12,741	950	2,244	1,036	....	1.50
Pottawatomie	13,393	74,535	621	1,609	5,602	56,404	39,979	1,229	3,140	12,648	32.82	38.13
Pratt	....	....	....	....	....	5,224	14,427	81	193	866	....	.25
Reno	1,322	33,830	88	668	550	40,218	164,401	2,436	5,814	7,800	67.82	15.00

*Taken from Quarterly Report, State Board Agriculture, for June 30, 1879.

COUNTY STATISTICS—CONCLUDED.

COUNTIES.	TABLE SHOWING THE NUMBER OF BEARING TREES.					TABLE SHOWING THE NUMBER OF TREES NOT IN BEARING.					Acres in small fruits...	Acres in vineyards.....
	Apple....	Peach...	Pear.....	Plum....	Cherry...	Apple....	Peach...	Pear.....	Plum....	Cherry...		
Republic.....	2,477	69,059	40	6,437	1,765	35,860	74,046	1,906	10,596	9,290	44.00	14.00
Rice...........	240	19,707	50	4,125	819	31,574	73,598	1,471	9,796	6,935	....	3.00
Riley..........	8,987	41,200	150	192	3,068	22,559	25,689	1,694	2,043	6,307	103.00	19.00
Rooks*.......	20	100	9	....	71	1,279	217	53	807	327	....	.50
Rush*.........	35	220	2	....	....	7,002	16,122	513	1,631	1,646	....	....
Russell.......	44	1,002	10	256	117	7,477	7,033	312	3,390	1,546	5.00	3.25
Saline.........	2,397	41,409	217	4,045	809	33,665	73,164	1,977	12,885	9,498	....	7.50
Sedgwick....	9,979	187,990	857	11,770	5,907	88,747	249,703	6,129	13,067	20,500	110.37	47.37
Shawnee.....	52,315	68,299	2,401	1,411	20,293	103,137	37,462	5,365	3,063	15,795	106.30	88.10
Smith*.......	78	9,769	50	11	350	19,886	46,617	1,007	5,474	2,922	....	2.00
Sumner......	7,361	144,673	503	2,588	2,176	69,047	298,666	4,015	5,124	14,423	85.00	19.00
Wabaunsee.	11,226	46,475	714	1,070	4,173	44,155	32,330	1,041	691	5,780	21.50	18.75
Wash'ngton	4,344	50,775	105	1,212	2,274	51,878	52,993	581	1,378	10,644	....	15.22
Wilson.......	32,177	142,035	1,045	1,946	10,945	97,334	48,274	2,572	4,585	17,035	197.73	94.87
Woodson....	14,396	70,084	303	554	7,501	42,562	26,113	1,496	1,702	10,477	....	8.20
Wyandotte.	64,805	18,406	1,798	1,269	9,969	53,429	16,951	2,465	1,684	6,337	176.70	178.00
Total....	3,742,453	4,672,849	58,748	162,694	540,128	4,064,668	4,036,906	155,732	255,276	671,002	3,078	3,247.57

* Taken from Quarterly Report, State Board of Agriculture, for June 30, 1879.

DIVISION, COUNTY AND LOCAL HORTICULTURAL SOCIETIES.

DIVISION SOCIETIES.

NORTHWESTERN HORTICULTURAL SOCIETY.

(Organized, May 10, 1874.)

REPORTED BY THE SECRETARY.

Officers for 1880 are as follows:
President—H. C. Snyder, Glasco.
Vice President—R. W. Knox, Cawker City.
Secretary—E. A. Taylor, Beloit.
Treasurer—H. T. Walker, Beloit.
Meetings are held annually.

SOUTHEASTERN HORTICULTURAL SOCIETY.

(Organized November 14, 1874.)

REPORTED BY THE SECRETARY.

The following is a list of officers for 1880:
President—H. E. Van Deman, Geneva.
Vice President—D. B. Skeels, Galesburg.
Secretary—G. W. Ashby, Chanute.
Treasurer—C. C. Kelsey, Humboldt.
Meetings are held quarterly, each year.

COUNTY SOCIETIES.

ANDERSON COUNTY HORTICULTURAL SOCIETY.

REPORTED BY THE SECRETARY.

The following is a list of officers of this Society, for 1880:
President—D. W. Houston, Garnett.
Vice President—A. A. Adams, Garnett.
Secretary—M. A. Page, Garnett.
Treasurer—Samuel Buchanan, Garnett.
Meetings are held monthly.

BOURBON COUNTY HORTICULTURAL SOCIETY.

REPORTED BY THE PRESIDENT.

The following are the officers of this Society for 1880:

President—J. D. Manlove, Fort Scott.

Secretary—J. B. Saxe, Fort Scott.

Meetings are held monthly at the residence of members, for the purpose of studying the results of methods in practice, as illustrated by living objects.

BUTLER COUNTY HORTICULTURAL SOCIETY.

(Organized January 29, 1879.)

REPORTED BY THE SECRETARY.

The officers for 1880 are:

President—W. H. Litson, Benton.

Vice President—J. R. Ward, Eldorado.

Corresponding Secretary—L. Miller, Eldorado.

Recording Secretary and Treasurer—F. C. Buck, Augusta.

COWLEY COUNTY HORTICULTURAL SOCIETY.

(Organized February 1, 1879.)

REPORTED BY THE SECRETARY.

The following are the officers of this Society, for 1880:

President—J. Cairns, Winfield.

Vice President—Dr. H. W. Marsh, Arkansas City.

Secretary—J. Van Doren, Winfield.

Treasurer—G. W. Robertson, Winfield.

Membership, 31.

Our first meeting was called February 1, 1879, when a committee to draft a constitution and by-laws was appointed, to report March 1, 1879.

At the second meeting, constitution and by-laws were adopted, as follows:

CONSTITUTION.

ARTICLE I. This association shall be known as the "Cowley County Horticultural Society."

ART. II. Its object shall be to obtain useful information from similar organizations and other sources upon the subject of horticulture and agriculture, and disseminate such information among the people as far as practicable.

ART. III. Its membership shall consist of members paying a fee of twenty-five cents annually, commencing at the first annual meeting, excepting ladies, who are admitted free.

ART. IV. Its officers shall consist of a president, vice president, secretary, treasurer, and librarian, who shall be elected at each annual meeting of the Society, by ballot, and shall hold their office for the term of one year, or until their successors are elected.

ART. V. It shall hold an annual meeting on the first Monday of January, and a semi-annual meeting on the first Monday in June, and at any other time the president may deem it necessary.

ART. VI. It shall provide (as soon as practicable) a library, and add books and publications for the use of the Society.

ART. VII. It shall provide, at each annual meeting, a standing committee of one person, to be appointed by the president—

1st, On orchards.
2d, Vegetable gardening.
3d, Small fruits.
4th, Forestry and hedges.
5th, Floriculture.
6th, Entomology.
7th, Nomenclature.
8th, Quadrupeds.

Said committees are required to report at each regular meeting, and oftener if deemed necessary.

ART. VIII. This constitution may be altered or amended at any regular meeting, by a two-thirds vote of the members present.

BY-LAWS.

The following shall be the order of exercises for this Society:

1st, Reading minutes of previous meeting.
2d, Communications and correspondence.
3d, Reports from standing committees.
4th, Reports from special committees.
5th, Miscellaneous business.
6th, General discussions.

Both constitution and by-laws were unanimously adopted.

FIRST ANNUAL MEETING.

This meeting was held at Winfield, January 5, 1880. The following officers were elected for the year:

President—J. C. Cairns, Winfield; *Vice President*—Dr. H. W. Marsh, Arkansas City; *Secretary*—J. Van Doren, Arkansas City; *Treasurer*—G. W. Robertson, Arkansas City; *Librarian*—C. J. Braine, Arkansas City.

Article 4 of the constitution was so amended as to provide for the appointment of vice presidents in each township in the county. The appointments were made, as follows:

TOWNSHIP VICE PRESIDENTS FOR 1880.

A. R. Gillett, Winfield, Pleasant Valley township; Mr. McGuire, Tisdale P. O., Tisdale township; R. H. Read, Arkansas City, Creswell township; N. J. Larkin, Richland, Richland township; P. H. Smith, Udell, Ninnescah township; Jas. F. Martin, Winfield, Vernon township; R. J. Hogue, Winfield, Walnut township.

STANDING COMMITTEES FOR 1880.

Orchards, Jas. F. Martin; Small Fruits, C. J. Braine; Vegetable Gardening, J. Van Doren; Horticulture, Dr. R. H. Read; Forestry and Hedging, A. R. Gillett; Entomology, G. W. Robertson; Nomenclature, R. J. Hogue.

The Committee on Orchards reported the following varieties for general planting:

Apples.—Summer: Early Harvest, Red Astrachan, Hightop Sweet, Cooper's Early White, Summer Queen. Autumn: Maiden's Blush, Lowell, Fameuse, Wine (*syn.* Pennsylvania Redstreak). Winter: Winesap, Missouri Pippin, Ben Davis, Rawles Genet, Lawver, Jonathan, Rome Beauty, Smith's Cider, Gilpin, Dominie, Milam, White Winter Pearmain. For trial: Kansas Keeper, Grimes's Golden, Fink.

Pears: Flemish Beauty, Clapp's Favorite, Howell, Vicar of Winkfield, Duchesse d'Angouleme.

Peaches: Alexander, Hale's Early, Crawford's Early, Heath Cling, Amsden's June, Old Mixon Free, Ward's Late Free, Royal George, Steadly, Stump-the-World.

Plums: Wild Goose, Washington, natives.

Grapes: Concord, Ives, Delaware, Hartford Prolific.

Blackberries: Kittatinny, Snyder.

Raspberries: Doolittle, McCormick (*syn.* Mammoth Cluster), Clarke, Brandywine, Turner.

Gooseberries: Houghton.

Strawberries: Wilson's Albany, Chas. Downing.

COMMUNICATION FROM PRESIDENT J. CAIRNS.

WINFIELD, KAS., Feb. 10, 1880.

G. C. BRACKETT, *Sec'y:* As we only organized last spring with a few members, and many of them not practical horticulturists, we found last year, on account of the failure of fruit, a hard one to make much advancement. I am happy to say that we are now enlisting the practical men of our county to an encouraging extent, and hope before another year, not only to make a practical demonstration of the utility of our society in ornamenting our homes with trees, fruit and shade, but with shrubbery and flowers, our farms with hedges, orchards, and native groves. I am fully persuaded that fully one-fourth can be added to the cash value of this county, by the proper observance of the means within our power in this respect. We hope to be able to give you a good report

next year. Every tree, shrub, rose or flower planted on the homestead is an educator, and an attraction to keep our children at home. What fruit so sweet as home fruit? It follows the wanderer wherever he may roam, and brings him back in memory to a mother's counsels, tears, and prayers. A true horticulturist is a worker together with God in ornamenting, beautifying, and making fruitful his footstool, that in its natural state He has ornamented with so many beautiful flowers. Excuse me, but I love nature and nature's God. How beautifully it displays his footprints and his work! "The heavens declare the glory of God, and the firmament showeth his handiwork. Day unto day uttereth speech, and night unto night showeth knowledge."—Ps. xix. 1, 2.

I am hoping that you will find time to make us a visit, and help us along in this good work.

J. Cairns.

CRAWFORD COUNTY HORTICULTURAL SOCIETY.

(Organized June 14, 1879.)

REPORTED BY THE SECRETARY.

The following officers were elected for the year 1880:

President—A. M. Sedwell, Girard.

Vice President—J. Carter, Girard.

Secretary—G. W. Mosteller, Girard.

Treasurer—W. J. Eldridge, Girard.

The constitution is similar to that adopted by the State Society, its declared object being the "advancement of the science and art of horticulture." Meetings are held at the court house, city of Girard, on the second Saturday of each month; the annual meeting in June. Membership consists of near forty, male and female. It is due Capt. Thos. Ping, to say this society owes its organization to his efforts.

As the apple is the most important topic, it occupied the attention of the first meeting. The subject was opened with an address by Vice President Carter, who said: Apples do better nowhere than here. I have owned many homes in different lands, on all of which I grew orchards, but none were healthier, grew better, fruited younger, or were more prolific than my present orchard, of Early Harvest, Carolina Red June, Red Astrachan, Lowell, Maiden's Blush, Jonathan, Rome Beauty, Winesap, Rawle's Genet, Ben Davis, and Willow Twig—all doing better than anticipated.

Arthur Sharp, one of the earnest fruit-men, addressed the July meeting on the same topic, and spoke in highest terms of the Winesap, Jonathan, Ben Davis and Rawles Genet—the latter especially, because of late blooming.

E. E. Turner thought the Ben Davis a worthy, fine apple, but said his friend Sharp overestimates it, as it is inferior in flavor.

D. B. Sanderson pronounced it excellent in every respect.

A committee appointed to visit orchards, and inquire into the condition and prospect of fruit for 1879, reported as follows: Most fruits a failure. A few apples—mostly Rawles Genet, Rambo, Maiden's Blush and Rome Beauty. But few cherries, plums or pears, most trees being too young to bear. Grapes, a grand crop. Small fruit almost a failure. The cause of failure was the late spring frost of April 5th.

Mr. Sanderson: Plow an orchard but one way, otherwise you contract the roots—to which there were some exceptions made.

Capt. Thos. Ping inquired of Arthur Sharp how he would cultivate an orchard. The reply was, seven to eight years, and seed down to red clover. Capt. Ping offered $1 to the one who would at the next meeting, exhibit the best lot of two pounds of grapes.

At the August meeting the topic, *Pruning and Cultivating the Apple*, was discussed.

Mr. Sharp: Would cultivate to corn, not to potatoes, as the latter absorbs too much potash. Knew but little of pruning, hence was experimenting.

Mr. Sidwell: Would not prune in spring, but rather in June, to cause fruitfulness.

Mr. Ping: Plant deep, else the hard winds will blow the trees down; cultivate to corn, not weeds.

Mr. Havely, a life-long fruit grower, said: I have 1,200 apple trees. I mulched and sowed to oats and rye, but did not get even a fair growth. Ought to be cultivated to corn or pumpkins. Prune sparingly, but thin some and shorten-in the strongest shoots to maintain the balance.

Mr. Sidwell: Cut off water-sprouts in August.

The display of grapes met the most sanguine expectations. Four entries were made—all fine—Concord and Dracut Amber. One vine 2½ feet in length contained 26 bunches of well-ripened grapes. The exhibit of Messrs. Shannon and Sanderson took the prize offered by Capt. Ping.

A display of fruits was made by the Society at the recent fair, with these results: Forty variety of apples—splendid specimens; three sorts of pears, and two of grapes.

At the October meeting, the following list of twelve best varieties of apples for family use was adopted: Cooper's Early White, Large Yellow Bough, Lowell, Maiden's Blush, Rambo, Jonathan, Grimes's Golden, Ben Davis, Missouri Pippin, Rawles Genet, Willow Twig, Talman's Sweet.

At the meeting, December 13th, the Red Astrachan, American Summer Pearmain, Wine, Wagener, Ortley, Winesap, Smith's Cider, Dominie, Lawver and Rome Beauty were adopted as a preferred list of apples.

For the copies of the State Horticultural Society Reports, for 1877-78, this Society is thankful. To the State Secretary, for his kindly advice and words of encouragement, this Society is under lasting obligations.

DICKINSON COUNTY HORTICULTURAL SOCIETY.

(Organized in 1877—date not furnished.)

The following are the officers for 1880:
President—J. M. Shepperd, Abilene.
Secretary—J. W. Robson, Cheever.
Treasurer—A. F. Hart, Abilene.

NORTH DICKINSON HORTICULTURAL SOCIETY.

(Organized February 1, 1880.)

The officers for 1880 are:
President—Mathew Bryson, Cheever.
Secretary—W. A. Cleveland, Cheever.
Treasurer—C. H. Colman, Cheever.

DONIPHAN COUNTY HORTICULTURAL SOCIETY.

(Organized October 6, 1879.)

REPORTED BY THE SECRETARY.

Officers for 1880:
President—X. K. Stout, Troy.
Vice President—R. P. Shulskey, Severance.
Secretary—S. Hatch, Wathena.
Treasurer—S. W. Hinkley, Doniphan.

PRELIMINARY ORGANIZATION.

Pursuant to a call for the formation of a county horticultural society, signed by S. Hatch, as published in the Troy *Chief* on September 17, the following gentlemen interested in the pursuit of horticulture assembled in the Agricultural Hall of the fair grounds on September 25, 1879, viz.: X. K. Stout, A. H. Waters, Abram Bennett, F. Brown, Thomas Henshel, S. E. Hardy, S. Hatch, J. B. Maynard, T. G. Ashmead, H. P. Saxton, Albert Perry, N. B. Wood, and E. N. Watkins, and effected a temporary organization by the choice of X. K. Stout as chairman and S. Hatch secretary.

Much interest was manifested in the purpose of the meeting, and, on motion of J. B. Maynard, it was unanimously voted to perfect a permanent organization.

On motion, the chairman appointed S. Hatch, Thomas Henshel and

Frank Brown a committee to prepare a constitution and by-laws, and the meeting adjourned to meet at the court house, in Troy, on the first Monday in October.

On October 6, met pursuant to adjournment; X. K. Stout in the chair.

The committee on constitution and by-laws reported a constitution and code of by-laws, which were adopted, and the following officers were elected, to hold their offices till the annual election in 1880:

President—X. K. Stout; *Vice President*—R. P. Shulskey; *Treasurer*—S. W. Hinkley; *Secretary*—S. Hatch.

The election of the Executive Committee was deferred till the annual meeting, on the first Monday in November.

The first regular annual meeting of the Society was held at Troy, November 3d; the President, X. K. Stout, in the chair.

R. H. Montgomery, H. P. Saxton and N. B. Wood were duly elected the Executive Committee for the ensuing year.

The President announced the following standing committees for the ensuing year:

Orchards, N. B. Wood; Small Fruits, S. Hatch; Vineyards, C. Porier; Gardening, Levi Smith; Floriculture, E. N. Watkins; Entomology, A. Perry; Essays and Lectures, R. H. Montgomery.

X. K. Stout and N. B. Wood were elected delegates to the annual meeting of the State Horticultural Society, at Holton, on the 16th, 17th and 18th of December.

The regular quarterly meeting of the Society was held at Troy, on Monday, February 2d; President in the chair.

The proceedings of the last quarterly meeting having been read, the President called for the report of the Committee on Orchards.

N. B. Wood responded, in a very interesting and instructive report on the best mode of planting, cultivating, pruning and protecting trees from the depredations of insects, gophers, and rabbits. He believes corn to be the best crop to raise among the trees for the first few years, affording an excellent protection against heavy winds, while the trees are young and the roots unable to bear the heavy strain that would otherwise be put upon them. Later, he would seed down to clover. He protects his trees against rabbits by setting corn-stalks around them, and tying at the top with twine.

The President urged the importance of planting the seeds of our finest varieties of apples with a view of raising seedlings, and obtaining a class of fruits better adapted to the conditions of our climate. Some valuable additions might be thus obtained. He instanced the cases of chance seedlings, some of which are showing high promise. Insects and bees are excellent fertilizers.

E. N. Watkins reported on floriculture, and gave a list of shrubs, vines and ornamental trees for the lawn. He meets with no trouble in transplanting evergreens, and thinks that the want of success complained of by many results from carelessness in handling, and particularly in permitting the roots to become dried by exposure before planting. Mulching, in our climate, is very essential, but watering without mulching should be avoided. Don't trim them up too high, but leave the lower limbs to shade the ground.

C. Porier submitted the following report on grape culture: The culture of the grape now forms a very important industry of Doniphan county. The bluffs of the Missouri river forming the eastern boundary of the county, and the many creeks emptying therein, furnish thousands of acres of land most excellently adapted to grape growing, and the many and successful vineyards already established afford convincing proof that the grape has now found a congenial home. We have the honor of being the pioneers of the State in grape growing, and our county excels all others in the extent of this industry. When the western part of our State shall have become better settled, and time be given for the growth of artificial groves and wind-breaks, thus tempering the force of the winds and moderating the severity of the climate, grapes will no doubt be successfully grown there; but the eastern part does now, and will for many years, hold preëminence as a grape-growing region.

With the exception of the Doniphan vineyards of the Brenner Bros.—the product of which is consumed exclusively for wine-making—a large portion of the grapes grown in the county the past season were sold for table use, and the demand far exceeded the supply. The opening-up of the western part of the State by railroads has created a great demand for this healthy and delicious fruit, and this demand is increasing much faster than the supply. A few years ago many were inquiring, "What shall we do with our grapes?" but the vast piles of baskets loading down the platforms of our depots, and awaiting the arrival of the train, during the grape season, are a satisfactory solvent to this question.

The ground for a vineyard should be undulating, and a southeast exposure is preferable; a northerly exposure should be avoided, as this delicious fruit requires an open exposure to the warm rays of the sun, to bring out its rich and varied excellence.

In preparing for planting, the ground should be plowed deep—from twelve to fifteen inches—which can easily be done with a single team by changing the land of the plow, and running it twice in the same furrow. After the ground is plowed, lay it off with cross-furrows, 8x8 feet, and plant at the intersections. Some plant 6x8, but in our rich soils 8x8 will in most instances be found preferable.

After an experience of twenty-five years of grape growing in Kansas, attended with failure and success, I am prepared, as the result of that experience, to submit the following varieties as best adapted to our soil, climate, and the demands of the market:

I place the Concord at the head of the list. It matures early, and in favorable seasons is preserved a long time on the vine. It is good for the table, for wine, for jelly and preserves, and will yield better and surer crops than any other variety. The vines will bear in nearly all kinds of soil, and will endure more neglect and injurious pruning than any other kind.

The next in the list for market and wine is the Ives. It colors about ten days before the Concord, and meets with a very ready sale before the latter comes into market. It is also a very good and prolific bearer, but will not endure neglect and still thrive, as does the Concord. It is a year longer coming into bearing.

The third in the list for market is the Hartford Prolific. It ripens about two weeks before the Concord. The great fault with it is the tendency of the berries to fall from the bunch; but if picked as soon as colored, and before it becomes too ripe, this is in a great measure prevented.

These include all that can be recommended for general cultivation for table use. The old Catawba is one of the very best for both table and wine, but its cultivation has been attended with so many failures of late, that it cannot be recommended. The same, also, with the Isabella, an old and very fine variety, but it has to be classed with the grapes of the past. There are other varieties, such as the Martha, Delaware, Muscadine, etc., which should always find a place in the vineyard for home use, but it requires more skill to grow them, and they cannot be recommended for general cultivation for market.

For wine exclusively, my experience leads me to class the Cynthiana as the best for a claret wine. Very prolific; stands severe cold without injury; blooms late, and matures about the same time as the Concord; berries medium, bunches heavy and compact; rich in saccharine matter, and of a very pleasant flavor; never rots; the leaves hold their healthy, bright color till frost. Hard to propagate, except by layers.

The Herman is another wine grape, of similar habit with the Cynthiana. The berries small, and the bunches long and not heavy-shouldered; very late to mature.

The Norton Virginia is another good wine grape, having the same habit and ripening about the same time as the Cynthiana. The bunch and berries smaller, the wine more colored — almost too thick to be agreeable, but possessing some valuable medicinal properties.

Many other varieties have been tried here, but are not at present to be recommended for general cultivation. Yet all who are interested in grape culture should try the newer varieties, for among them we may find varieties that will prove of great value. Disease of both leaf and berry is making its inroads among the older kinds, and it is only by the acquisition of new varieties from time to time that we can hope to maintain the integrity of our vineyards. And to this end allow me to encourage the importance of raising seedlings. It is a simple matter, and requires but little time and labor. In the fall when the grapes are ripe, collect the seeds of the choicer varieties and sow them as you would apple seeds, and the second year transplant and cultivate as you would other vines. In this way no delicate methods are required, as in crop fertilization, and the result may prove equally valuable. It is simple, cheap, and can be performed by any one.

In putting out a vineyard, the vines should be planted ten inches to a foot deep. Given clean cultivation, a hoed crop may be raised among them the first year, but no crop that will shade the vines. One cane only should be allowed to grow the first year, which should be cut back to two or three eyes the following spring, and two canes allowed to grow the second year. A trellis is the most convenient, and no doubt cheapest in the end, though good, strong sumach stakes are very convenient, and afford a good substitute. Until the vines come into bearing, temporary stakes may be used. The third year, if the vines are strong, they may be pruned to bear a partial crop.

I consider March the best time to prune; but all pruning should be completed before the sap starts to flow, or bleeding will follow and prove injurious to the vine. All should be tied snugly to the trellis before the buds put forth.

Vines should not be allowed to over-bear, for it injures them for future bearing, and sometimes kills them.

DOUGLAS COUNTY HORTICULTURAL SOCIETY.

(Organized October 3, 1867; chartered May, 1872.)

REPORTED BY THE SECRETARY.

The following is a list of officers of this Society, for 1880:

President—D. G. Watt, Lawrence.

Vice President—E. A. Coleman, Kanwaka.

Secretary—Sam. Reynolds, Lawrence.

Treasurer—Omar H. Ayer, Lawrence.

Standing Committees for 1880—Orchards, S. W. Pearson, Lawrence; Small Fruits, P. Underwood, North Lawrence; Entomology, A. H. Griesa, Lawrence; Floriculture, Mrs. F. M. Burlingame, Lawrence; Marketing Fruits, E. A. Coleman, Kanwaka; Meteorology, J. Savage, Lawrence; Lectures and and Essays, Miss M. L. Macy, Lawrence; Vineyards, M. Sedgwick, Lawrence; Nomenclature, G. Y. Johnson, Lawrence; New Fruits, G. C. Brackett, Lawrence.

MEETING HELD AT THE SOCIETY'S ROOMS, UNIVERSITY BUILDING, FEBRUARY 20, 1879.

The President being absent, E. A. Coleman was called to preside.

ORCHARDS

was the subject previously assigned for discussion at this meeting, and called up.

THOS. PIERSON: Had made no special examination of orchards, but believed the peach crop on the low lands would be a total failure; on high lands there might be a partial crop.

Mr. Vincent: A large portion of my peach trees are killed. I intend to saw them off, after which they will sprout out and make handsome, vigorous trees, and I strongly recommend others whose trees are frozen to do likewise.

Mr. Coleman, (whose orchard is on high land,) said: One week ago, Dr. Macy and myself examined the peach buds, and found many of them sound.

Mr. Flory had examined his young peach trees, and found the wood all right.

D. G. **Watt** stated that his apple, cherry and plum trees were all right, but he was not so sure about his pear trees.

PRUNING.

The best time for pruning apple trees was discussed at length. This question was raised by Mr. Stanley, who advocates summer pruning.

Thos. Pierson: I prune about the first of June.

Mr. Watt: February and March are the best months in which to remove large limbs, as the cut will dry up before the flowing of the sap.

Forrest Savage: At one time pruned my trees in summer, and thereby lost about one-fourth of them, while those trimmed before the flowing of the sap remained uninjured.

E. A. **Coleman**: Whenever you see a limb that wants cutting off, do it. (This he afterward modified by saying that young trees may be trimmed at any time with impunity, but did not consider it safe to prune old ones after February and March.)

N. P. **Deming**: February is the best time for trimming old trees.

Joseph Savage: In sawing off large limbs after the sap has risen, the adjoining bark becomes *devitalized*, making a suitable resort for the flatheaded borer.

Mr. Watt: By trimming before the foliage has started, one can see better what limbs to remove, and has a much better chance for making a symmetrical tree.

J. C. **Vincent**: We should be careful and not prune too much..

The preponderance of opinion was in favor of trimming old trees before the sap flows. In all cases the wound should be covered with wax or rubber paint.

D. G. **Watt**: I lately visited the orchard of James Harvey, in Topeka, and was much pleased with his mode of pruning. Mr. H. saws the limb off close to the tree, and then hollows out the cut. He claimed that by being concave the wound heals more readily and leaves the trunk smooth, whereas the ordinary way of pruning leaves an unsightly excrescence.

SMALL FRUITS.

Mr. Coleman, being inquired of as to the condition of the blackberry, said: I can tell you to-day that wherever they have been well mulched, they are all right. I expect to pick a full crop the present year. My raspberry plants are in good condition. Have an acre of the Turner raspberry, which, on close examination, I find uninjured. Mr. Brackett, who is much interested in the success of the red raspberry, also examined them, and agrees with me that the canes are sound and healthy. The wood being of a drier and firmer nature than that of the blackcaps, a novice might be mistaken and consider them winter-killed.

MR. WATT: Find my blackberry canes killed down to the snow-line. As deep as the snow lay, the canes are green and healthy. This fact argues against the theory of "summer-killing."

MR. COLEMAN, who believes all the injury to the canes is done in the hot months of summer, replied that in July and August the ground frequently cracks open to a considerable depth, exposing the lateral roots, which run about three inches under the surface. The effect of this exposure is to close up the pores so that the returning sap is checked and cannot flow back to the roots, hence the damage to the cane. Heavy mulching prevents all this injury.

MISS MACY inquired if it was necessary to mulch between the rows.

MR. COLEMAN: The whole surface should be mulched sufficiently deep to retain plenty of moisture and prevent the growth of weeds, and this should be annually repeated.

MR. WATT: Strawberries are in good condition.

MR. BRACKETT: Never knew the plants to pass the winter in better condition.

At the last meeting a committee was appointed to confer with the officers of the Kansas Valley Fair Association, for the purpose of arranging a premium list for horticultural products at the next fair. Mr. Brackett, chairman of that committee, reported that he had conferred with the officers of the Association, who promised to prohibit the sale of intoxicating drinks on the grounds, in deference to the wishes of the members of the Society and others. They were not willing to appropriate more than $100 for the display of horticultural products, while they appropriate $600 for horse-racing.

On motion, the discussion of the question was postponed till the next meeting.

THE CULTURE OF ASPARAGUS.

BY MISS M. L. MACY.

Nothing stands alone in this world. "The chain holds on, and where it ends is unknown." How strongly is this felt, even in the vegetable kingdom. Who does not praise it while looking on the principal constituents of plants, *i. e.*, carbon, oxygen, hydrogen and nitrogen, and contemplating their gradual transformation into vegetable albumen, and vegetable caseine, or any of the elementary forms of the nitrogenized compounds, so absolutely essential, directly or indirectly, to animal life? Every particle of food that is assimilated by the body, is vegetable. Why is it, then, that we will take so much of it indirectly in animal food, and so ignore one of the most palatable, most wholesome and most easily raised of the vegetable kingdom? In the face of all this, there is not one farmer in a hundred who raises asparagus, and many of them do not know its use, further than to decorate a room, or hang up as a roost for flies. It is the first thing in the garden fit to eat, consequently it comes, just in the warm days of early spring, when we crave something freshly grown, when the system really needs it, too. I cannot imagine anything that I relish more than a breakfast of asparagus on toast; warm mornings in early April, try it, and you will be of the same opinion. Make up your mind to put out a bed this spring, and this is the way to do it:

As soon as the frost is out of the ground, select a light, sandy loam—but it will do well in almost any soil—dig deep, and work in well-rotted barnyard manure. A plot of ground 20x20 feet will supply a medium-sized family. On this sized plot use from twenty to forty pounds of salt, well worked in.

Procure strong one or two-year-old plants from some market gardener; this will save much time. Set one foot apart in the row, and rows eighteen inches apart; this will soon make a solid bed. The second year from planting you can use all you want. There will not be much to do now until fall, except to keep down what few weeds come up. Near the middle of October burn off the tops clean; give another light sprinkling of salt, and a dressing of three inches of manure; dig this in lightly in the spring, being careful not to disturb the plants. Salt put on each year will increase the growth of the plants, also keep down weeds, and can be put on in fall or spring. A bed well prepared and looked after at the proper time will yield for ten or twelve years. You need not be afraid of killing it out very easily; for not long since, the asphalt flooring of a skating rink in London appeared to be "blistered" in several places, and it was found that this was caused by the forcing up, through several inches of concrete, of some asparagus plants, the roots of which had been left in the ground, which had been part of a garden.

When you wish to gather for use, let it shoot up from four to eight inches high, take hold of it at the ground, bend slightly until it snaps off, then all you get will cook. After washing, take several stalks at a time, lay them down on a table, and cut up like rhubarb; put on in clear water, add a little salt, and cook until done, which takes but a short time. Prepare as green peas for toast: put a layer of it dry in the bottom of a tureen, add a little butter to the asparagus, and dip on a light covering, add another layer of toast and more asparagus until all is used, then cover, and serve hot. There are many ways of serving it; you can use your own judgment and tastes. This plant is a native of Great Britain, where it is found on the sandy sea beach, growing luxuriantly under the salt sea breeze.

TREE PEDDLERS.

MR. DEMING reported that he was credibly informed that a tree peddler was now in the southwestern counties of Missouri, selling Douglas county fruit trees. He goes by the name of Martin Sedgwick, and claims to be the President of the Douglas County Horticultural Society. He finds the business a very lucrative one, as the prestige of his official position furnishes a ready passport to the orders and pockets of his customers. The committee appointed at the last meeting to look after tree peddlers, in order to save the public from being swindled, should "go for this fellow." If he is an impostor he should be handed over to justice; but if he should prove to be the veritable Martin Sedgwick, President of the Douglas County Horticultural Society—he who raises geological potatoes that will keep a generation without decay, he who has so long and profoundly studied "Biblical horticulture," and finally he who, as Deacon Sedgwick, re-marries old settlers in pure Dutch style for the fee of one "tollar," why then he should be made to "fork over" a bonus to this Society for every tree sold by virtue of his official position.

As Mr. Sedgwick was absent from the meeting, the question remains in doubt.

ENTOMOLOGY.

The root aphis was discussed. It is seldom found above the roots. The tree aphis is a different and distinct insect. The question was asked, "How near will it do to plant young trees to the spot where old ones were killed by the aphis?" The question was referred to the Committee on Entomology.

Mrs. Burlingame was called upon, and responded by repeating the following poem:

OH, DON'T YOU REMEMBER?

Oh, don't you remember the old hillside farm,
  And the farm-house, with clapboard, so gray;
With the garden of roses, and sweet pinks and balm,
  And the meadow with buttercups gay?
And don't you remember how, indoors and out,
  And under the old apple trees,
We gayly were laughing and skipping about,
  With bare feet, as busy as bees?

How we all played together—the girls and the boys,
  And the houses, and workshops, and stores,
Rag dollies and earthen—and just as much noise
  As our voices could make out of doors?
How we loved the pastures and woodland to roam,
  And gather bright mosses and flowers?
We thought then, as now, "There is no place like home,"
  And no home so delightful as ours.

And don't you remember the pleasant school road,
  And the school-house as sunny as June,
The lessons we learned, and the marks that we "toed,"
  And how we played "pigeon" at noon?
Our sunbonnets, crumpled, hung over our necks,
  And the summer wind played with our hair,
While the sun paid our faces his warmest respects,
  And kissed our small toes that were bare.

How we climbed the steep hillside, as nimble as goats,
And skipped o'er the hedges in glee;
And mimicked the woodlark and whippoorwill,
And sang with the chick-a-dee-dee?
We waded the brook, when the water was low,
And shouted, to make the woods ring,
Or played on its banks in the summer's soft glow,
Light-hearted as birds on the wing.

You remember the pond, where the geese used to swim;
We called it the old ocean wide,
And in an old hat, that was minus the rim,
We sailed our rag dolls on its tide.
And when they had cruised the wide ocean thro',
And outdone both Magellan and Cook,
We drew them all home, in an old ragged shoe,
And called it a coach-ride they took.

How we danced in the mud, with our bare, naked feet,
And played it was Dutch way to churn;
And made mud biscuit, and pancakes so sweet,
Without any cook-book to learn;
How we pitied the children, whose stockings and shoes,
Forbade then to share in our fun;
How we stirred up our pies, and puddings, and stews,
And left them to cook in the sun?

Several pieces of music were performed by the Savage brothers, and Sam. Reynolds sang a song, with cornet accompaniment.

On adjournment, all felt that they had spent a pleasant and profitable afternoon, and decided to attend the next meeting without fail.

MEETING HELD IN THE UNIVERSITY BUILDING, MARCH 22, 1879.

E. A. **COLEMAN**, by invitation, presided.

ORCHARDS.

The reports from different parts of the county show that the injury to the peach is only partial. While the fruit buds are generally killed on the low lands, on the high lands the buds promise a fair, if not a full crop.

MR. SMITH, of North Lawrence, reported that both buds and trees are killed in that locality. Apple buds are presumably safe, and a large crop is anticipated by all. Some fears are entertained for the pear crop, as the buds are unusually forward for the season.

MR. BRACKETT believes that no damage has been done the apple crop, and that Douglas county will have enough of peaches for home consumption. He has received reports from sixty counties, and is therefore able to form a pretty correct opinion of the fruit prospects of the State. In the southern and southwestern counties a large crop of peaches is expected. In Wyandotte county it is feared that the crop is entirely killed. In some localities, the early Richmond and American varieties of cherries are considerably injured, while the English Morello has entirely escaped.

MR. DEMING is not in the least discouraged, believing that the fruit crop will be generally good.

MR. DA LEE believes the peaches and apples are all right, but is somewhat doubtful about his cherry crop. If that should fail, it will be the first time in many years. He has just cut down a seedling peach tree that had annually borne from three to six bushels of fine fruit for sixteen consecutive years.

MR. ANDREW DOUGLAS is fearful that his peach crop is killed.

SMALL FRUIT.

It is presumed that the grape is uninjured, nothing being known as yet to the contrary. Lawton and Kittatinny blackberries are both seriously injured. Many plantations are killed down to the snow-line. The Doolittle and Miami raspberries have suffered injury, while the Turner, a red variety, seems to have escaped.

MR. BRACKETT reported that Smith's Ironclad raspberry was sound clear to the extremity of the cane, while other varieties near by were badly damaged. The killing of the blackberry cane to the snow-line brought into question the correctness of Mr. Coleman's theory, that the injury is all done in the hot months. Mr. Brackett contends that injury is done by both extremes of heat and cold, and that after plants are enervated by excessive heat, they are more susceptible of injury from the other extreme of cold.

This is the gist of much that was said on this question. Mr. Brackett's position is doubtless correct.

The Western Triumph was spoken of as being a very hardy plant. The canes never kill from any cause, and if the fruit should prove as good as represented, it will supplant and supersede all other varieties of the blackberry family.

Strawberries were reported by all to be in good condition and promising a good crop.

PROF. PATRICK, of the State University, was here called upon for an address, but said he had nothing prepared; but if some one would give him a text, he would try to preach a short sermon. He felt under obligations to the Society, for he had just eaten the best dinner he had had for six months. Walking up to the geological cabinet, he took from it a beautiful specimen of crystalized gypsum, explaining its composition, chemical properties, and fertilizing agencies. Gypsum, which is sulphate of lime, when ground is known as plaster, or plaster of Paris, which is an entirely different article from common plaster, the latter being carbonate of lime. All plants contain from one to five parts of nitrogen. This gas they cannot take directly from the air, but it is taken from the ammonia in the air. The explanation of the great value of gypsum is, therefore, that it "fixes" ammonia—that is, the ammonia is held in the soil by the gypsum, and its volatility prevented. The ammonia is appropriated by the plants, which absorb it by their roots, leaves, and bark. It is also claimed that plaster sown upon the land gathers and retains moisture. Although this property is universally conceded to gypsum, science has never found any satisfactory explanation for it. It is also ascribed to gypsum, that it will bring in white clover and other plants wherever sown upon the soil.

The "talk," as the Professor called it, was quite an interesting one, and was listened to with great attention. The Professor's dinner was not only fully paid for, but a credit entered for his next.

VINEYARDS.

Grape-vines should be pruned before any danger of bleeding — that is, before the sap rises. If the pruning is neglected at the proper time, it should be postponed till the leaves unfold.

O. H. **AYER** has killed many of his vines by pruning when they bled freely.

The question was asked, "Does it injure grape-vines to prune them when the wood is frozen?"

MR. BRACKETT: In some parts of Wisconsin the pruning is nearly all done when the wood is frozen, and without any apparent injury.

ENTOMOLOGY.

MR. DEMING presented a written report, as follows:

MR. PRESIDENT: In making my report on the apple-tree root louse, (*Eriosoma pyri,*) which is sometimes called the woolly plant louse or woolly aphis, I find it is doing some damage to the apple trees, and in some instances it has caused the tree to die. Mr. Vincent reports some of his apple trees killed by them. I have some of the roots here that have been attacked by them. They cause the roots to blister and form knots, and the roots are most sure to die. It is seldom they cover the whole of the roots of large trees, but generally where there are sprouts at the base of the trees; but if numerous enough to sting all of the roots, they cause the trees to die in most cases.

Strong ashes, when applied to the roots, will kill them. Hot water is sure to destroy them. Those having apple trees will do well to examine them. I find them in sandy soil as well as in black loam. They are quite numerous in the orchards I have examined. The insects in their perfect state are winged, and I see no reason why they cannot go from tree to tree, or to different orchards.

I would not plant trees where the old ones have been killed by them, unless first mixing strong ashes through the soil or drenching it with hot water, so as to destroy the insects.

My advice to you is to look well to your trees. If the woolly plant louse is on the roots, be sure to destroy them, or they may destroy your trees.

Now is the time to pick off the leaf rollers. They will be found rolled up in the dry leaf and sticking to the branches.

It will be well to look out for the tarnish plant bug when your trees are in bloom. If plenty, they sting the germ of the apples, and in a few days they will look as if frost-bitten. I hope they will not appear. I know of no remedy for them, only to keep the ground free from rubbish in the fall, as they live through the winter in the rubbish.

The following letter, from the Secretary of the State Entomological Society of the State of Michigan, was read by Mr. Brackett:

G. C. BRACKETT, ESQ.: As regards our apples, they were freer from the codling moth in 1878 than for many years. Some attribute it to the fact that in 1877 we had but few apples, and hence there was no chance for them to multiply. This is scarcely tenable, because there were plenty of rosaceous plants that did fruit, and they are pretty good at suiting themselves to circumstances, as you know. Our people are adopting the band method of fighting them generally, but I am far from being satisfied that this accounts for the freedom of our fruit from their depredations last year. My own impression is, that climate had everything to do with it. The winter and spring were exceedingly unfavorable to them. I found hundreds of them hatched out in warm days during the month of February, and of course all of these died from exposure. So that if my hypothesis be correct, it will help you but little in carrying on the warfare, for we have not learned yet how to manipulate the weather in our favor.

Our fruit prospects are promising in the northern half of our southern peninsula. The thermometer has scarcely touched zero, and in the southern tier of counties there has been but one cold snap, which sent the mercury very low. I think there will be peaches all over the State. We are seeking by legislation to check the peach yellows, which is proving a terrible scourge. Whole counties are being stripped of their principal means of income through the destruction of the peach trees. Unless the disease is checked, we shall have to go into other fruits, leaving the peach for some future generation.

Yours cordially, CHARLES W. GARFIELD.

Prof. Snow explained the difference between the root and the leaf aphis. The latter is a European insect, while the other is American, and preys only upon the roots by inserting its beak and sucking out the moisture. This insect is very prolific, producing from seven to eleven generations in a single season. There are three parasites, however, which keep the insect in check. Boiling water is often poured on the roots to destroy it. Prof. Snow thinks that the temperature of the water should not exceed 150°. The boiling heat would subject the trees to injury. This insect is more damaging to young than to old trees.

VEGETABLE GARDENING.

A paper was read by your reporter on potato culture, which brought out some discussion on the subject. The question was asked, "When is the best time to plant the Peachblow?"

MR. COLEMAN, who is an expert in potato growing, replied that he had always planted from the 10th to the 20th of May, and seldom failed.

MR. WATT never troubled the weeds after his potatoes were laid by; believed it was injurious to the crop to disturb the weeds while the potatoes were maturing.

PROF. CARRUTH had often failed, as he supposed, from cutting the tubers. He thought it caused them to rot. If the cut potato is allowed to dry before planting, there is no danger of rot from that cause. Rot is often caused by a heavy fall of rain immediately after planting.

On motion, a committee was appointed to arrange for and locate the summer meetings. The chair appointed N. P. Deming, T. M. Pierson and N. Henshaw.

MEETING HELD APRIL 19, 1879, AT THE STATE UNIVERSITY.

The weather was delightfully pleasant, the traveling excellent, and consequently the attendance was unusually large.

Having been lectured by one of the ladies for saying so much about previous dinners, I am not allowed to mention this one. "Why," she said, "people will think that all we care about is dinner, and that we come here for the purpose of eating and drinking, and I don't want you to say anything more about it." The charge, however, is entirely groundless, for there is not an epicure in the Society—not one that "lives to eat." "Eat to live, and live to be useful," is the motto of all good horticulturists. Had it not been for this injunction placed upon me, I should have spoken of many of the nice things that ornamented those dinner tables, and might have said that the dinner had "few equals, and no superiors."

Fearing that this important society has not been sufficiently brought to the attention of the public, so very little having been said about it by the press for the last year, I take the liberty of presenting the names of a few of the more prominent members, with some of their characteristics as indicated by their names.

First, I will mention that of Mr. G. C. Brackett. He is one of the strongest brackets or supports in the Society. A few such brackets would place it on as firm a basis as that of Mount Oread. What boots it if the spelling does not suit to a "t"?

Then there is G. Y. Johnson, the son of John. It matters not whether he can trace his genealogy to that "John" who lived in the wilderness of Judea—who was the first entomologist and apiarist that history records, having studied the locust and bee questions from a very practical and utilitarian standpoint—or whether some other John, less prominent and less remote in the annals of history, bore the ancestral name. Mr. Johnson doubtless excels his prototype, not only in these departments just mentioned, but also in floriculture.

N. P. Deming is quite noticeable in the horticultural catalogue. The derivation of his name, when analyzed, is *dem*, the people, and *ing*, continuing. When freely translated it means, "*continuing* to hunt and destroy pestiferous insects, and grow fruit for the *people*." This is neither a doubtful nor illogical construction, as all good scholars will admit.

Mr. T. M. Pierson is descended from the man with a piercing eye, etc. Mr.

Pierson has inherited that characteristic, as not a round-headed borer in all his orchards escapes his piercing glance and penetrating probe.

Then there is S. W. Pearson, the son of him who grew pears. This accounts for his love of pear culture, and his general interest in horticultural matters.

In this list, friend E. A. Coleman must not be forgotten. If the first syllable in his name stands for *colored,* it is because he was such a good friend to the colored race during their bondage. If it stands for *cold,* it must be a misnomer; for a warmer man, both in debate and friendship, cannot be found in the Society. His "latch-string always hangs out."

Then there are the Savage brothers, whose ferocity has never been discovered, except when directed toward the enemies of horticulture—which are pestiferous insects and weeds. If their lineage can be traced back to savageism, then the ameliorating influences of civilization, horticulture and music have produced the antithesis of that aboriginal condition. "Music hath charms to soothe the savage breast."

Mr. Smith, of North Lawrence, is one of the very few men known by that name. The primary and principal occupation of his ancestors, doubtless, was to make pruning knives for horticulturists and dissecting instruments for entomologists.

Then comes Mr. McClintock, son of Clintock, "Mc" being the Scotch for *son.* Clintock is a corruption of *cling* and *stock.* His ancestors were therefore peach growers, and raised *clings* by budding or grafting the *stock.* This definition is etymologically accurate.

The name of J. C. Vincent is derived from the Latin *vincere,* to conquer. Mr. V. has made many conquests in his horticultural career, his last victory being the conquest of the vice-presidency of this Society, a laconic description of which might be given in the language of Rome's great general—*veni, vidi, vici.*

Such an array of ability, both inherited and acquired, gives the Society a very prominent and enviable position in the horticultural world, and affords unlimited opportunities for usefulness.

The President of this Society, Deacon Sedgwick, having lately returned from his missionary labors in southwestern Missouri, was present, and gracefully and ably filled his official chair.

ORCHARDS.

S. W. Pearson, chairman of committee, reported that he had carefully examined several orchards, and found a large portion of the fruit buds badly damaged. The early-budding apples were all very badly injured. The later-budding varieties would probably make a fair crop. Peaches would be almost or quite a failure. Pears are very full of bloom, but not more than one-third will set. The same is true of cherries. While the bloom is unusually full, the germ is dead, and there can be but little fruit. The Early Richmond seems to be affected more than the native Morello.

Mr. Coleman has examined his orchards more carefully than usual, having a large number of young trees just coming into bearing. He thinks the tarnish bug is doing much of the damage to fruit blossoms. His opinion of the coming fruit crop agrees with that of Mr. Pearson.

MR. JOHNSON stated that the same effects had been noticed in his neighborhood. The cherry crop there would not amount to anything.

MR. WATT'S pear trees are perfectly white with bloom, but he believes there will not be a pear in his orchard.

THOS. W. PEARSON has an abundance of bloom, but expects but a partial crop of fruit.

From the foregoing it will be seen that the fruit crop of Kansas, except the winter apples, will be a very small one for this year. This, however, is only a circumstance, and will not be any permanent damage to the fruit reputation of the State. The fruit crop of Michigan was almost a total failure the year before last, and yet she redeemed herself by last year's crop.

At this juncture of the proceedings, S. Reynolds sang that fine old pathetic song by Russell, "The Old Sexton." The piano accompaniment, by Miss Annie Yarnold, was rendered so nicely that it called out great applause.

TAR, AND ITS EFFECTS AS A PREVENTION FOR INSECT ATTACKS.

MR. COLEMAN, who has been experimenting on his apple orchard with tar and tarred paper, reported the result. He claims that his trees, while the borers are kept out, are not damaged in the least. Those that he has washed directly on the bark seem as vigorous and healthy as the ones covered with the tarred paper. The wash is made with pine tar, reduced in consistency one-third by spirits of turpentine.

This report brought out an animated and lengthy discussion. The general expression was, that it was not a safe experiment. Several cases were cited where it was known that trees had been killed by the application of tar. That trees might go through one or two seasons without apparent injury, was admitted, but they would eventually succumb to the effects of closing up their pores. Then the question arose that the Society should be very careful what theories and practices it advocates, as many people might be misled. Dr. Marvin replied that no sensible person would consider individual opinion the teachings of the Society. There is such a diversity in location and soil that no two experiments would be attended with the same results, under different conditions and in different seasons. The reader, therefore, must carefully weigh individual conflicting opinions, and judge for himself. He recommends the Society to do the most of its work through the action of committees. Then the action of the Society on these committee reports would be official. This discussion ended by the appointment of a committee to examine Mr. Coleman's trees.

MR. BRACKETT: In a recent number of the *Kansas Farmer* it was stated that the Missouri Pippin and Ben Davis were synonymous, being one and the same apple.

The members were on their feet in an instant, ready to correct this error.

The trees and fruit of the two varieties are quite dissimilar in their appearance and habits. The distinctive points of difference were at once described. The fact that the Ben Davis was propagated fifty years ago while the Missouri Pippin only dates back twenty years, is sufficient to correct this error.

SMALL FRUITS.

The blackberry canes are generally winter-killed.

MR. WATT reported that Mr. Churchill's canes were all right.

MR. PETTINGILL, of Black Jack, reported that the canes in his neighborhood were all killed; also, that strawberries looked badly.

MRS. McCLINTOCK read a paper on "Home Adornment." After enumerating the many ways by which home could be made pleasant and attractive, she said that in order to enlist the sympathy and coöperation of the husband in the cultivation of flowers, it was sometimes necessary to use strategy. This she had found necessary in her own case. She was willing to give her sister friends the benefit of her experience. As it was not proper to commit the same to masculine ears, the information must be given by private means. For the information of her lady friends who have similar difficulties to encounter, it is here stated that Mrs. McClintock resides some six miles south of Lawrence, and her post-office address is Lawrence. All communications perfectly confidential, and no charges made.

MR. BRACKETT read a paper from Col. G. M. Waugh, of Gardner, Johnson county, on "Horticulture and Agriculture Compared."

The committee appointed at the March meeting, to prepare a programme of meetings for the summer months, made their report. That part of it referring to the May meeting was adopted, the rest of the report being laid on the table till the next meeting, to await further developments. The May meeting will take place on the grounds of Wm. E. Barnes, Esq., of Vinland. The other meetings will be duly announced.

MUSIC.

Besides the song referred to, the exercises were interspersed with instrumental music by Mr. F. Savage, on the cornet, accompanied by his accomplished daughter, on the piano.

The proceedings throughout were characterized by an unusual degree of interest, and all seemed to feel the importance of the cause in which they were laboring.

The time for the next meeting is the third Saturday in May.

MEETING HELD AT THE FRUIT FARM OF W. E. BARNES, VINLAND, MAY 16, 1879.

The President called the meeting to order at 11 o'clock A. M. He congratulated the Society on the pleasant and very favorable circumstances under which it was holding its first picnic of the season. He had no set speech prepared about the warbling of the feathered songsters in bush and tree; the beautiful and ever-varying foliage and verdure, with which all nature was clothed; the glorious orb of day, fountain and source of light and life; the beauties and bounties of nature all around, etc., etc. Yet if he could not say anything to them on these beautiful topics, he must tell them a little story in his experience while laboring in southwestern Missouri, in the cause of horticulture. Although he succeeded in making many proselytes, he found some very hardened sinners. One old lady seemed past all hope, for after he had gone through the whole list of trees, shrubs and plants, she rejected everything with scorn, and he began to fear that her day of grace was past, when he happened to mention *pie-plant.* "Pie-plant," she said, "I have hearn' of them afore—I reckon I'll take about five, two of custard and three of pumpkin, for I never seed pies growin' on plants in Missouri."

A member proposed to send Deacon Sedgwick back to Missouri to continue and complete his missionary labors as soon as the "conditions are favorable," which will probably be about next spring.

ORCHARDS.

The condition of the orchards and fruit prospects were discussed at great length. The President asked for reports from the various localities, in order that the Society could obtain all the facts in the case, from which an approximate estimate might be made. It is well known that location, soil and altitude all have their influence on the fruit crop, so that the reports on the same varieties from different orchards varied considerably as to their prospective yields. On the whole, however, the prospect of an ample supply of apples for home consumption is bright enough, and there may be a surplus for shipment.

MR. DEMING reported that in his orchards the Willow Twig, Rome Beauty and some other kinds were carrying as much fruit as the trees should bear. Trees that are not bearing are showing signs of blight, but not enough to cause any serious damage.

MR. LOVEJOY made a very favorable report. Northern Spy, Rawles Genet and Talman's Sweet are quite full; the other varieties are scattering. The trees located on the highest portions of the orchard are bearing best. He will not have many pears or cherries.

ROBERT PIERSON will have a good crop of the Roman Stem and Rome Beauty, while the other varieties will be scattering.

MR. PARDEE will have a tolerably full crop of the Rawles Genet, Porter and Talman's Sweet. The other varieties will yield but little.

E. D. PETTINGILL: Porter, Willow Twig, Rome Beauty and Wagener are very promising. The other varieties will be almost a failure.

E. A. COLEMAN said that at first he did not believe he would have a bushel of apples. On a further examination of his trees, he finds that he will have an abundance for himself and some to spare. He will also have a partial crop of pears.

W. E. BARNES will have a good crop of the Rawles Genet, Lowell, Porter, Willow Twig and Northern Spy. He thinks the apple crop on the whole will be very light, as the leading varieties of winter fruit, such as the Ben Davis, Missouri Pippin and Winesap, are almost failures.

WM. GILL will have a full crop of the Rawles Genet, Willow Twig and Porter.

MR. DEMING thinks that the value of the apple crop in this county will be nearly if not quite equal to that of the wheat crop.

N. HENSHAW will have a full crop of the Northern Spy, and but few from the other kinds.

WM. PLASKETT will have a good crop of Rome Beauty, Lowell, and Duchess of Oldenburg; beyond these, he does not expect much. The other varieties, of which he has many, will be only scattering.

WM. ROE will have a crop of Rawles Genet, Willow Twig and Lowell.

DR. EVATT would not have very much fruit in his orchard, from the fact that it was both young and small; but the Willow Twig and Wine apple were full. His Smith's Cider is not bearing, which never failed before.

REV. C. H. LOVEJOY remarked that he went East last year, and the people were rejoicing over the prospect of a good crop of apples, which they had not had before in ten years. He thinks there is a greater variety of apples planted in the orchards of this county than anywhere else in the United States, and hence there will never be a total, or even a serious failure.

DINNER.

The people grouped themselves over the grounds, and took dinner in the "basket picnic" style. The large number present rendered it impossible to prepare tables at which all could be seated. The enjoyment of the "feast of good things," however, was not in the least degree lessened by this arrangement.

After the hour for dinner had expired, the meeting was called to order. The subject of

SMALL FRUITS

Was called up, whereupon **O. H. AYER** reported that his raspberries were badly killed, and strawberries needed rain to produce a full crop; of the raspberries, Smith's Ironclad had stood the winter the best.

MR. PARDEE reported his strawberries in good condition, and with an early rain would make a good crop. The Turner (red) withstood the winter better than the blackcaps.

A. H. LATHROP has the Miami and Doolittle in good condition, and full of fruit.

MR. LOVEJOY never had better prospects for small fruits than at present, except for the blackberry; his Lawtons would be at least half a crop. He has a thornless raspberry, called the Davidson, which did not winter-kill, and is bearing full.

The committee appointed to view the premises reported the following, through its chairman, N. P. Deming:

Your committee would respectfully report that they find the Northern Spy, Mother, Porter, Rawles Genet and Willow Twig are bearing full. The Ben Davis will be more than half a crop. The Winesap and White Winter Pearmain will bear but little. Pears will be a failure. The Concord grape is in good condition. We find the number of apple trees on this fruit farm to be 7,000, of which 5,000 are in bearing. The evergreens, which are 10,000 in number, are the finest and greatest number your committee have yet seen, and doubtless are the finest and largest assortment in the State. They are in excellent condition, showing that all kinds of evergreens will grow and thrive in Kansas.

ENTOMOLOGY.

MR. DEMING exhibited a cottonwood borer in process of transformation, which was nearly metamorphosed into a beetle—its perfect state. He stated that the woodpecker was doing good work in digging it out of the trees. He also exhibited a perfect beetle of the apple-tree crown borer, which proved to be quite a curiosity to many present.

MR. LOVEJOY has not lost more than six trees in ten years from borers in his orchards. He attributes his immunity to the woodpecker, which is quite numerous on his grounds.

VINEYARDS.

The promise of a good crop of grapes is very encouraging.

MR. GILL has two vineyards; the one on the high land is bearing full, while the one on lower ground seems to be very late in starting. He asked for an explanation.

MR. AYER replied that the principal buds were likely killed, and the fruit had to rely on the *dormant* buds, which are always later in starting.

This theory seemed satisfactory to the Society.

The question of tarring trees came up, when the fact was brought to light that several orchardists in and around Vinland had for years been in the habit of tarring their trees, and among their number was Mr. Barnes.

LECTURES AND ESSAYS.

Miss M. L. Macy read the following essay, which was listened to with attentive interest:

"There is a spirit in men, and the inspiration of the Almighty giveth them understanding." How full of this glorious inspiration have been some of the early pioneers of our noble State! As you meet them now, with their sunny countenances, and glance back for a moment at what they have gone through, we think their motto has been, "Whatever you do, do cheerfully, as if your heart was in it."

"'Twill smooth the way to the goal you seek,
And give you strength to win it;
For little of silver and gold you'll get,
If you make up your mind to frown and fret.
Little of joy, for a lonely hour,
If you've never planted a single flower.
What, though the task a hard one be,
Still with a smile begin it;
And whatever you do, do cheerfully,
And just put your heart right in it."

Among those who have fought the battle successfully, who came here with a heart full of hope, and a determination to go through and win, with a full faith in the resources of our State, was one to whom we are indebted for our pleasant meeting here to-day. His experience has been much the same as many others, yet he seems to have had an unbounded faith in horticulture in Kansas. He came here a young man, with an ox team, in 1856, settled upon a homestead in what was then the "wilds of Kansas," built a cabin, made even the "shakes" for it himself, and laid the foundation of what is now his beautiful home. He "bached it" until 1868, when he took to himself Miss Gertrude Dunn, which union has proved a happy one indeed, and the finest touches of woman's nature have been added to make the home complete.

Kansas, at the time he came here, was considered no home for fruit of any kind. People would tell you that fruit would not grow here, and that it was just wasting time and money to try to raise it. In the face of all this, Mr. Barnes, with many others, went to work and put out large orchards of different kinds of fruit. He was the first to introduce and grow the Concord grape in Kansas. They have worked long and faithfully through many discouragements that would have daunted less brave hearts, but as you look around you to-day, you can see what faith and perseverance will do. Here are 17 acres in vineyards, 150 acres in fine groves and orchards, interspersed with evergreens and flowers. Two years ago he reaped something of a reward in 8,000 bushels of apples.

His advice was always given when asked as to horticulture, with a kindness and simplicity which were remembered and followed, although his views differed from others, such as the best bark to feed rabbits was the bark of a dog, and the best location for early apples was near the house. His experience, when written up, would be much the same as many of our fruit growers of this country, and their combined success has done much to stimulate the growth of this noble occupation.

All over this great commonwealth we find people looking to Douglas county as the center around which revolves the horticulture of the State, which every year grows more extensive, and before many years Kansas will be the great first center (in her special fruits) of the world; and we all believe with one accord, there is no other State like ours.

"No dearer shore;
Thou art the shelter of the free,
The home, the port of liberty,
Thou hast been and shalt ever be,
Till time is o'er."

MISCELLANEOUS.

On motion, it was decided to hold the June meeting at Bismarck Grove. As the third Saturday in June will be the summer solstice, the Society can enjoy the longest day in the year.

DR. EVATT invited the Society to hold one or more of its summer meetings on the fair ground this summer, and on motion it was decided to accept the invitation for the July meeting.

A very important feature of this meeting, and which contributed to the enjoyment of all, was the presence of the Baldwin City Band, which, though not quite equal to Gilmore's Band, of New York city, discoursed excellent music, in correct time.

After a vote of thanks to Mr. and Mrs. Barnes for their generous hospitality, and also to the Baldwin City Band for their excellent music, the meeting adjourned.

This meeting was one of pleasure, encouragement and profit: pleasure socially, encouragement in the improved prospects since the last meeting for a considerable fruit crop, and profit in the exchange and interchange of ideas, views and opinions.

MEETING HELD AT BISMARCK GROVE, JUNE 20, 1879.

PRESIDENT M. SEDGWICK called the Society to order, and remarked: "There seems to be some doubt in the minds of our people of the truth of some statements made at the opening of our last meeting. I must admit that I have been losing ground for 'truth and veracity' since I left off quoting scripture. Then, if I had told the people that I had swallowed a whale, and backed up the statement by some historical fact from the Bible, they would have believed it. To-day the meeting will be opened in a different way, and the talk will be confined to fruit. We must watch our Society closely to keep out irrelevant subjects and side issues, or we shall degenerate into some of the *isms* of the day, thereby diverting our noble Society from its important and legitimate work."

President Sedgwick then favored the Society with an original poem, characteristic of wit and humor. It was recognized by some as a parody on one of "Mother Goose's" immortal rhymes, which, our young folks will remember, begins with "A was an archer, and shot at a frog," etc.:

A stands for apple, the king of all fruits,
Delicious for man, and loved by most brutes.

B is for berry; though smaller in size,
So delicious in flavor should not be despised.

C is the currant, and cherry so fine,
When baked in the pie, or pressed in the wine.

D stands for date; with us it won't grow;
Nor what date exactly none of us know.

F is the fig, rich, mellow and sweet;
In Italy it is eaten for both bread and meat.

G is the grape of scriptural renown,
In the old world and new quite commonly found.

H stands for huckleberry, the poor Indian's food;
Dark of complexion, but decidedly good.

J is the juniper, a medicine with some,
More particularly when soaked in New England rum.

. . . .

M stands for melon; with its covering of green,
And rich core of pink, it is fit for a queen.

N stands for nectarine, now don't you forget it;
All you who are without it will sorely regret it.

O is the orange, from Florida State,
And always in season, both early and late.

P is the pear, the plum and the peach;
All three so delicious, there's a power in each.

Q is the quince; though hard, sour, and woody,
Yet plenty of sugar soon makes it a goody.

R is the raspberry, delicious and good,
When grown in the garden, or wild in the wood.

S is the strawberry, the top of the pile —
The pride of old age and the joy of the child.

T stands for tomato; though common and cheap,
Should not be forgotten, for 'tis excellent to eat.

U is for underdrain, if these fruits you would grow.
V stands for vengeance, on the insect, our foe.

W stands for work, God allotted to all.
With these you'll succeed with large fruits and small.

The President then resumed his place, amid the cheers of the crowd.

The meeting was favored with the presence of several distinguished persons, among whom were Dr. Reynolds, of Fort Riley, Hon. Sidney Clarke, and Mr. and Mrs. T. D. Thacher.

FRUITS.

The reports on fruit from different sections of the county differed but little from those made at the last meeting. The strawberry crop has been rather light, the dry weather coming at that juncture cutting it short. The raspberry crop has not been more than half of that of last year; of the black-caps, Smith's Ironclad seems to have done the best, while of the red varieties, the Turner has borne most. Of this latter berry, Mr. J. C. Bardell had some fine specimens. He claims that this berry is both hardy and prolific. Mr. Underwood, of the same place, had specimens of the Smith, Gregg, and Ganargua; the last-named is of a purple tint, being a cross between the red and blackcap.

There will no blackberries worth counting on, nearly all the canes having been killed to the snow-line.

The cherry crop, both early and late, amounts to very little; they are not half enough for home consumption.

The pear and peach crops are also failures.

As to grapes, Wm. E. Barnes considers the vines in excellent condition, giving promise of a full crop.

There will be a scarcity of early apples, but an abundance of the winter varieties for home use, with some to spare. The Rawles Genet will be the most abundant.

Mr. T. D. Thacher was called upon. He stated that he had not attended the meetings for some two years, as business had prevented, but kept himself posted on the doings of the Society. He considered the Society of much more than local importance, as questions and subjects brought out by it were discussed all over the State. He knew the Society was doing a good work, not only among its own members, but wherever the reports were read, people were encouraged and stimulated to greater care and exertion in the production of the various kinds of fruit found adapted to Kansas.

Dr. Reynolds, of Fort Riley, was then called for, who read the following paper on fertilizers:

FERTILIZERS.

The subject proposed to be discussed in the present paper is not *fertilization*, as announced in your local paper, but *fertilizers*, or the proper uses of manures. Fertilization of the soil can require no labored argument before a body of intelligent and practical agriculturists and horticulturists, such as are now before me; but fertilizers and how to use them, may open a wide field for thought and discussion. And as I know, from my reading of your doings, that it is your custom to analyze all the theories that are advanced by the speakers and writers who are invited to address you, I should feel that I had taken advantage of the honor conferred upon me, when you announced me as one of your essayists, if I dwelt upon a subject which was all *pro* and no *con*, and which would deprive you of the privilege which the sailor said he enjoyed in the Episcopal Church, of being able to "jaw back."

Plants, like all other living organisms, cannot live and grow without food. Indeed, they are more epicurean than animals, for it matters not how much food is within their reach, they will partake of none that has not been thoroughly prepared. They differ, however, from ordinary epicures, in that they never eat, but demand that all their nourishment be furnished in a liquid or aëriform state. All the food furnished by the soil must be dissolved in water, and nothing is plant food until it is in solution. In no other form can nutriment enter into the composition of plant organism. It must receive its entire nutriment through the pores in its leaves and in the fibers of its roots, which are too minute to be discernible by the naked eye.

Animals have the power of locomotion, and ambulate from point to point in search of their food, while the plant, from its organism, must remain stationary. It is true that it does make faint efforts at locomotion by extending its roots and rootlets in search of nourishment; but its powers in this particular are always limited.

Chemistry has taught us that manures and fertilizers furnish the ingredients which plants possess, and which they must therefore receive in a decomposed and liquid form. The moss and the oak feed alike. To be of avail, therefore, as plant food, fertilizers must be applied in such a way as to insure the solubility of the chemical elements which they possess, and must be so distributed through the soil as to enable the rootlets to form a connection with their decomposed and soluble constituents; and numerous experiments have made it positive that the more thoroughly and intimately the plant food is diffused through and mixed with the soil, the greater will be the growth of any plant placed therein, in a given time.

These facts, which no one can gainsay, make it necessary for us to inquire what the constituents of plants are, and to ask if they receive from the soil all the nourishment which enables them to live and grow; or learn, if possible, if the air of heaven be a mutual and reciprocal partner in this great and never-ceasing work.

And what a wonder, what a unity in this atmosphere by which we are surrounded, and by which all things live! It possesses properties so dissimilar that we are slow to believe that they can exist together. It rises above us with its cathedral dome arching toward that heaven of which it is the most familiar synonym and symbol. It floats around us like that grand object which the Apostle John saw in his vision, "a sea of glass like unto crystal." So massive is it, that when it begins to stir it tosses about great ships like playthings, and sweeps cities and forests like snowflakes to destruction before it; and yet it is so mobile that we have lived years in it before we can be persuaded that it exists at all, and the great bulk of mankind never realize the truth that they are bathed in an ocean of air. Its weight is so enormous that iron shivers before it like glass, yet a soap-bubble sails through it with impunity, and the tiniest insect waves it aside with its wing; and yet so rich is it in nutriment that every plant that lives and grows feeds upon it in a greater or less degree. Without it the rainbow would want its triumphal arch, and the oak its majestic form and figure.

"Plants," says the father of agricultural chemistry, "are found by analysis to consist principally of charcoal and ceriform matter, and that the principles which they yield, on burning or distillation, were derived from elements which they gain either by their leaves from the air, or by their roots from the soil.

All manures from organized substances contain the principles of vegetable matters, which, during putrefaction, are rendered either soluble in water or aëriform, and in these states they are capable of being assimilated to the vegetable organs. No one principle affords the pabulum of vegetable life; it is neither charcoal nor hydrogen, nor azote, nor oxygen alone, but all of them together, in various states and various combinations."

In this paragraph Sir Humphrey Davy enunciates broad principles, but he narrows in the nutrition of the plant to carbon, hydrogen, azote and oxygen, and fails entirely to do justice to potash, soda, lime, magnesia, and the phosphates. But later chemists, Boussingalt, Gilbert, Lawes, Johnson, Caldwell and others, who, stimulated by Sir Humphrey's successes, have traveled further in the road which he opened than his own life permitted, have proved beyond a cavil that plants are composed of silicic acid, alumina, lime, magnesia, oxide of iron, potash, soda, chlorine, sulphuric acid, phosphorus, carbon, etc. The last named is of vital importance to all plants, and therefore is furnished in two ways: 1st, to the soil, which makes it more retentive of manures, enables it to appropriate larger quantities of the fertilizing gases of the atmosphere, gives it greater power to absorb moisture, and renders it warmer and more congenial to plant life and development; and 2d, it unites with the oxygen of the air, makes carbonic acid gas, and floats at will from plant to plant, and imparts its carbon through the leaves. Waring, in his Elements of Agriculture, says: "Carbon gives to the soil power to absorb moisture, because it is of itself one of the best absorbents in nature. . . . It renders the soil warmer, because it darkens its color. Black surfaces absorb more heat than light ones, as a black coat, when worn in the sun, is warmer than one of a lighter color. By mixing carbon with the soil, we darken its color, and render it capable of absorbing a greater amount of heat from the sun's rays. It will be recollected that, when vegetable matter decomposes in the soil, it produces certain gases—carbonic acid, etc.—which either escape into the atmosphere, or are retained in the soil for the use of plants. The production of these gases is always accompanied by heat, which, though scarcely perceptible to our senses, is perfectly so to the growing plant, and is of much practical importance.

The most careful and abundant analyses of grasses, cereals, roots and fruits have been made in England, France and Germany during the last thirty years, which show the sources whence *all* plants feed, and prove that without these elements they will not live and mature. It is true that but a a small per cent. of their food is received from the earth, and that the amount is quite variable with different plants, nevertheless it is indispensable for all.

Analysis prove that there are over sixty elements on the earth, but that plants select and use less than one-half of that number, chief among which are carbon, oxygen, hydrogen, nitrogen, potassium, sodium, iron, phosphorus and silicon. The first four are obtained in part from the atmosphere, while all the others *must be furnished by the soil.*

It is this which makes the proper uses of manures and the maintenance of the fertility of the soil a subject of paramount importance. If continued cropping of fruits, cereals or vegetables removes from the land those minerals which are necessary for plant life and growth, a marked decrease of crops and finally a total barrenness of soil must follow. Hence the importance to every agriculturist and horticulturist of knowing what manures should be applied to maintain the fertility of his soil while he is calling upon it for large yields of the various products which make food for man and beast.

A thought arises here which, if I mistake not, is of too great importance to be omitted, and which has been suggested purely by the caption of this essay. Our soils have all been derived from the gradual disintegration and decay of rocks, which are composed in part of the minerals which are absolutely necessary to sustain plant life. But are not those minerals often locked up in chemical compounds and by mechanical conditions which render them unavailable? Is it not therefore a "proper use" of certain manures to break up these compounds into elementary substances? or, in other words, to unlock these supplies and prepare them for plant use?

This may tax the skill of the agricultural chemist and of the observant manipulator of soils, but will not both be more than repaid by the benefits which may follow from their labors?

Another use of manures is to atone for the exhaustion caused by the growth of previous crops, and as certain crops require large amounts of certain elements, say potassium and phosphorus, the fertility of the soil cannot be maintained unless these elements are given back. The soil may abound in all the other prerequisites, but if these are wanting, it will be useless for the production of those plants which feed largely on these elements. Did this assertion require proof, I could furnish it by the volume.

Time was, and not far back, when this view of manures, which is now everywhere approved, was not entertained either by the observing farmer, the fruit-grower, or the learned chemist. Davy gave the stamp of his genius to the propagation of the idea that manures are improvements and amendants to ground in the first place, and that their value as food materials to the plant is only secondary; and Jethro Tull, a boisterous Berkshire farmer, and the inventor of the seed drill, was the first who brought forward the idea that minute earthly particles supply the nutriment of the vegetable world. He anticipated Liebig in the grand idea that the mineral matters of the soil are the food of plants; but his notion of manures was, that they act in no other way than in ameliorating the texture of the soil. In other words, that their agency is solely mechanical. "All sorts of dungs," he says, "and composts contain some matter which, when mixed with the soil, ferments therein, and by such ferment dissolves, crumbles, and divides the earth. This is the chief and almost the only use of dung, for, as to the earthy part of it, the quantity is so very *small* that, after a perfect putrefaction, it appears to bear a most inconsiderable proportion to the soil it is destined to manure, and therefore in that respect is next to nothing."

It will not detract from the reputation of this great agriculturist if we admit that, like most others who leave the beaten path, he was sometimes misled by inexperience, and sometimes deceived by a too-sanguine imagination. As I have elsewhere said, "this eccentric innovator, like many others to whom the world is a debtor, made a great mistake, not in claiming much, *very much*, for the improved tillage which he demanded, but by his rash affirmation that with it manures and fertilizers might be dispensed with. Had he confined his recommendations of the drill to cereals and to leguminous and bulbous-rooted plants, without puzzling his brain about the food of plants, being content with pulverizing the soil and killing the weeds, he would have deserved a high seat among the world's benefactors."

Tull's view of the use of "dung" fell stillborn, until Liebig, thirty years after, pointed out that farm-yard manure is not indispensable; that it can successfully, though not economically, be replaced by mineral substances.

The elements most likely to fail us in all our Kansas lands are but three; and these can be supplied by barn-yard manures, by the raising and plowing under of red clover, or by the judicious application of "commercial fertilizers." But to supply either of these by littering the barn-yard, to be trampled by stock, while wind, rain, and sunshine, each in turn is exercising a damaging influence upon the compost, is not an economical labor. When such stuff is hauled out upon the land, nine-tenths of each load is mud and water.

Potassium, phosphorus and nitrogen are the only elements of the soil that we are likely to exhaust. The latter is furnished to the plant, in part, through its leaves, but only in part, as it cannot be assimilated by the plant, save in some compounded form. It must be furnished, therefore, in some degree through the soil, either by the application of nitrogenized salts, by an abundant application of ammoniacal manures, or by the plowing-in of plants which are known to possess it in a large degree. And no plant, as far as at present known, stores up in its stems, leaves and roots, such large supplies of nitrogen as the red clover.

Peter Collier tells us that the roots of clover amount in weight to two-thirds of the stem and leaves, and that a good crop will leave upon the soil, after the removal of the hay, from 150 to 200 pounds of nitrogen per acre — a supply abundant to meet the wants of any one subsequent crop of grains or roots; and Boussingault and other French chemists assert that 250 pounds of clover roots are of equal value to 1,000 pounds of barn-yard manure; and the growth of red clover on all uplands is (I know from observation during my boyhood in Putnam county, N. Y.) greatly stimulated by the use of sulphate of lime — called in commerce, gypsum or plaster.

Why nitrogen should be sought for in commercial fertilizing establishments while it can be procured so cheaply from the stable or barn-yard, or from the growth of red clover, I am at a loss to devise; and I see no wisdom in carting stable manure a mile or more for the purpose of nitrogenizing the soil when it can be done quite as effectually and far more economically by raising a crop of clover. Red clover should be every farmer's and horticulturist's *vade mecum.* He should sow it, make hay of it, feed it, plow its roots under, and swear by it whenever he has any swearing to do. It made farming profitable in England and Scotland, and it will do the same for Kansas if we employ it as our agent.

Potassium, another plant element liable to be wanting in our soil, which is exhausted by cropping, can be imparted by wood-ashes, and by all other substances that contain potash. Feldspar is rich in pure potash (fifteen per cent.), but owing to its extreme insolubility, it is practically useless to the farmer. Potash is contained also in the excrements of animals, but in limited quantities, that are not sufficient to restore the proper balance to soils where it is largely deficient; but if the crop which has exhausted the potash be fed upon the farm, and the alvine discharges be carefully preserved and applied to the soil, there is but little loss of this most valuable element, and if it be needed in abundance as food for the potato and other roots, it should be given liberally in manures or supplied to the soil in those commercial fertilizers which contain it in abundance. Perhaps the most valuable in this ingredient of all domestic places, are the hen-house and the ash-hopper, both of which are often ignored by the horticulturist. The last named not only supplies potash, but renders close and compact soils pulverable. The first named is as rich in phosphorus and nitrogen as much of the merchantable guanos. The Chincha Islands are nearly exhausted of their guanos; and the Guanape and other islands which furnish the present supply, while they may be as rich in the phosphates as the Chincha, are said to be far less so in ammonia. Professor Johnson, in his learned work, "Agricultural Chemistry," gives this test for guanos: "Mix a little quicklime with the guano, and the odor of ammonia will be strong if it is reasonably rich in that element."

But I am digressing. If the droppings of domestic fowls (other than the goose) were kept dry as the guanos of South America have been by that dry climate, it would be nearly as valuable; perhaps not quite as rich in the phosphates, since fish-bones decomposed are one of the constituents in guano. As a top-dressing, it is believed to be almost a failure in this climate, but when composted and applied to root crops, my own experiments have been always crowned with success.

Phosphorus, which occurs in all organisms, save the sponge and like lower orders, is present in the soil in even smaller quantities than potash, and is one of the most important constituents of plants, especially of wheat and some other cereals. Hence it is that wheat and most other cereals exhaust this element, and make the lands unproductive, in a shorter time than other crops, unless — as is now the case with a limited number of our Eastern farmers, but has long been the case in England — bone-dust and the guanos are used to keep up the supply. The liquid excrement of our domestic animals furnishes it in no measured manner, and where that is carefully saved and given to the soil, the loss of this important element of plant life is in a great measure restored. A learned agricultural chemist assures me that a single cow will in this way produce in one year 900 pounds of solid matter, and furnish ample phosphorus and other elements to manure one and one-fourth acres of ground.

Prof. Johnson says: "It may be assumed as certain that the phosphate of lime, which bones contain so largely, is of important effect in promoting vegetation. All our cultivated plants require and contain both phosphoric acid and lime, and from the vegetables on which they feed, all animals derive the entire substance of their bones. This same phosphoric acid and lime, therefore, must exist in the soil on which the plants grow, or they will neither thrive themselves, nor be able properly to nourish the animals they are destined to feed. If a soil, then, be deficient in phosphate of lime, or its constituents, it is clear that the addition of bones will benefit the after crops, not only by the animal, but by the earthy matter also which they contain. But there is no deficiency of these elements in your soil; they exist in abundance, but cannot always be found in a condition for assimilation. I believe, therefore, that if the rocks by which you are surrounded were ground to powder, and scattered on the surface of your tillable land after plowing, you would have no lack of phosphoric acid and lime. While I would, under *very rare* circumstances, recommend an outlay for merchantable fertilizers, I would urge close scrutiny. The greed of man is great, and our Eastern horticulturists have just passed through the dearly-bought experience which British toilers had to endure before the common law of England made it a criminal offense to sell as a fertilizer a valueless article. To-day, there may be found in the American market so-called fertilizers barely worth the barrels in which the stuff is packed, and the sale of which, considering the advance which has been made in agricultural chemistry, is a reproach to the rural community."

Prof. Colwell, of "Cornell," has a learned letter upon this subject, which all purchasers of fertilizers would do well to read and heed. He shows how merchantable and soluble phosphates become insoluble, and therefore useless to plant growth.

The most scientific horticulturists in England will buy but one kind of artificial fertilizers, viz., sulphosphate of lime, believing that their stables and clover fields supply every other plant food required. But it must be remembered that the English farmer not only makes, but protects from destruction, a large amount of manure yearly.

The subject I have endeavored to discuss is of boundless limits. To do it justice in all its bearings, a volume must be written; but this of course was not expected by you of me.

Mr. President, I should like to add one word before you give this sharp-witted audience a chance to "jaw back," and it is this: I have avoided, for reasons that I deemed good, the use of chemical and scientific terms; but I acknowledge, sir, that this may lay me open to the charge of want of exactness. I hope, therefore, that you will counsel them to be a little tender in their criticisms, not only on account of my extreme youth, but on account of my desire to be useful to my old neighbors, and to my fellow-Kansans generally.

A vote of thanks was tendered the essayist.

ENTOMOLOGY.

MR. DEMING exhibited specimens of beetles, from both the round and flat-headed borers, besides the larva of the codling moth. The birds are working industriously in destroying them, and it is thought that in a short time the borer will be a thing of the past. Mr. D. also reported the following: On the subject of using tar to prevent borers working in apple trees, my opinion is, the man that uses his knife twice a year in hunting borers will have a much better orchard at the end of five years than the one that depends on tar as a preventive. I make this report as my deliberate judgment, after years of careful observation and experience.

HON. SIDNEY CLARKE was called for, and responded in a very neat and encouraging speech. He considered Kansas the most favored part of the country, not only in fruits, but in climate, soil, and freedom from flood and tempest. In 1814 a great storm arose, which extended all over the six New England States, lasting for three days. On the farm, some sixty miles from Boston, on which he was raised, three hundred large apple trees were torn up by the roots, and corresponding destruction followed over the entire six States.

As horticulturists, we ought to be proud of Kansas—her soil, her climate, her central position, her past record, and her future prospects. To give some idea of the demand for fruit in the near future, it is confidently believed that the next twenty-five years will give Kansas a population of not less than 3,000,000 souls. He considers agricultural and horticultural societies a benefit to the State, as they investigate all questions relating to the products of the soil, which are the real wealth of the Nation.

DR. EVATT: I remember that failures occurred, both in fruit and farm crops, many years ago, when I lived in Ohio, quite as frequently as they do in Kansas, and some of them were total failures. I have strong faith in Kansas, and intend to live and die here.

The meeting adjourned at an early hour.

MEETING HELD AT MILLER'S HALL, IN LAWRENCE, JULY 19, 1879.

J. C. VINCENT, Vice President, called the meeting to order.

ORCHARDS.

There seems to be no particular change in the prospect for winter apples since the last report. There is no doubt, however, but what the fruit, when gathered, will measure up much more than at present anticipated. The present season is much more favorable than last for a perfect development of the apple crop; this, together with the fact that the fruit is thin on the trees, makes it highly probable, if not certain, that it will be large in size, and excellent in quality. The Rawles Genet — the great standard apple in Missouri — will yield almost, if not quite, a full crop, and there is a large number of bearing trees of this variety in the county. Mr. G. C. Brackett has the largest orchard of this variety, in the county, if not in the State. It is well known that the Genet is a very late apple, and one of the best keepers we have. The Winesap and Willow Twig — both good apples — are promising, in many orchards, a fair yield and fine quality.

MR. BARNES, of Vinland: Apple trees generally are very thrifty, and making a vigorous growth.

SMALL FRUITS.

MR. COLEMAN very minutely, and at length, gave his experience with the different varieties of raspberries. His crop in the aggregate was not more than one-third. The fruit set full enough, but the dry weather prevented its perfect development. He believes in growing for profit, the very earliest and latest varieties. He thinks much of the Turner (red), and believes it to be the coming berry. Would cultivate well and often, up to the time of picking. His yield of raspberries for 1879 was about 2,000 quarts, half of which he marketed in Topeka, at an average of twenty cents per quart.

GRAPES.

MR. GRIESA reported some slight indications of rot, but as yet nothing serious.

MISS LOLA BELL had not noticed any rot, but the late storms had damaged her vines to some extent.

MR. AYER thought the prospect for a good grape crop excellent. All that is required now is a sufficiency of dry weather, to prevent rot.

FLORICULTURE.

MRS. BURLINGAME was called on, and responded in the following essay:

When we refer to the loveliness of flowers, they seem to come before us with their pleasing forms and colors, and if a student in botany, their strange structure and history interest us. If we have not the time to understand their history, characteristics, etc., we can all cultivate and love a few of them, which is just as important as to understand their history. If we love and cultivate them, we are inspired to study and learn all we can about them. They afford an entertainment that no home should do without. An Eastern writer once said: "I never see a man with a nosegay or a single bud in his buttonhole without thinking the better of him. It is like the gleam of light through a crevice that tells of warmth and good cheer within." And another says: "Beauty need not cost money. God has made this world with all its beauty included, and he is pleased to have us love and study what he has created. The flowers are choice gifts, and if we cultivate them, it will gratify our love for the beautiful and elevate and edify us."

It was Leigh Hunt who said: "Set flowers on your table, a whole nosegay if you can get it, or but a single pink, a daisy or a buttercup, or preserve but a handful of grasses, and you have something that reminds you of God's creation, and that gives you a link with the poets who have done it most honor." All who have availed themselves of the entertainment the flowers offer, universally agree that to the infant and the thinking man they bring alike a refreshing satisfaction that no other thing can afford.

It has been justly said by a member of the Douglas County Horticultural Society, that "the cultivation of flowers is comparatively neglected." We have heard housekeepers say, "I have never tried to have flowers; I have no time for outside work, and I think they must be a great care." While we fully sympathize with these careful housekeepers, let us remember what we have heard of the woman who "was troubled about many things." All our time need not be taken up about the "latest style of dress" and the duties of the household. We assure all who try to cultivate a few beautiful flowers, that instead of "a great care," they will prove a source of great pleasure and reward.

We were once traveling with an acquaintance, when the conversation turned on flowers. She said: "I think a bed of petunias looks coarse and weedy, and I don't like them." Now, we have always been fond of a bed of petunias on the lawn, so we replied that people's tastes differed. For a bright, variegated display, in a sunny situation, we like the petunias much; and if she could see our bed of petunias, she would say they are beautiful, faithful friends.

We will follow on in our travels. We soon came to a beautiful residence, with green lawn, and handsome shade trees; but this did not attract our friend's admiration. The next residence we passed had the broad, green lawn, and shade trees, and bed of petunias—a blaze of brightness in the July sun. Our friend exclaimed: "Oh, how beautiful! Isn't that yard beautiful? I wish we were nearer." Brightness and beauty had put the weary spirit to flight, and she is now a lover of all the flowers, and comprehends the beauty of their cheerful mission.

"Ye have the power,
To reach the soul
In thought's hushed hour,
Ye flowers."

As pretty a window garden as we have ever noticed, was kept by a neighbor who did not understand the culture of flowers. She had never seen a catalogue of flowers, nor read a "floral guide." She visited a friend who had a fine collection of plants, and admired them so much that her friend gave her cuttings of a rose, free-blooming white, pink and scarlet geraniums, a fuchsia, a heliotrope, blue gentian, and parlor ivy. She told her to plant the cuttings in a shallow box filled with one part garden soil and two parts sand. It was the last of June, and she advised her to keep the box of cuttings in a north window the first week, then a week in the west window, and two weeks in a south window, or in the yard; water them once a week, and at the end of four weeks, to plant in three-inch pots filled with good garden soil, or soil from under old sod. They all rooted, and made good strong plants for winter. She bought a white primrose and a root of smilax, and with her blooming plants, foliage and vines, all tastefully arranged, she had a window full of beauty. She said: "I love my flowers, and it is so easy to learn their wants. I shower them once a week, and keep the soil loose and moist on top." We have always been glad we saw that window.

There are a few pretty annuals of which the seeds germinate readily, and they will stand a full Kansas sun. They are the phlox drummondii, balsams, double zinnias, portulacca, coxcomb, summer chrysanthemum, globe amaranth, petunias, and ragged robin. There is a long list that do well in sheltered situations, but some of us have not been in the Far West long enough to have large shade trees. There are perennials and biennials that do well unsheltered. The choicest of these are perennial phlox, pinks, perennial pea, larkspur, scarlet geraniums, chrysanthemums, gladiolus, and lilies. The moles are sometimes destructive to lilies. We have no remedy for ants and moles, and will thankfully receive one.

Weeds are persevering intruders, but thanks for our fingers and rakes, we have the satisfaction of plucking them out.

We have grown successfully the white lily and Japan lily, planting them the first of September in ten-inch pots filled with good garden soil, and when winter came set them in the cellar, and in February and March brought them to the living-room. After the blooming season was over, we plunged the pots into the open ground, and before hard freezing covered them with straw, or sent them to the cellar. We have learned by experience that if kept moist, freezing will only destroy the leaves and stalks, and they will come out again, but if allowed to become dry, freezing will kill the entire plant.

We must not omit to mention the hardy vines and climbers. We have no need to select a situation for some of them. They are equally adapted to the sunniest south window or the north wall, and there is a long list, so that all can be suited. The cobea is a good annual, but rather hard to start. The wistaria, honeysuckle, clematis and woodbine are faithful perennials, and cannot fail to please where a hardy climber is desired.

Since flowers are the expressions of God, and exert a kindly influence, let us endeavor to extend their mission.

"For their voiceless lips are living preachers,
Each cup a pulpit, and each leaf a book,
Supplying to my fancy numerous teachers,
From the loneliest nook."

The place for holding the next meeting was discussed, and by vote it was decided to hold it on the Kansas Valley Fair grounds.

RECIPROCITY.

BY SAM. REYNOLDS, LAWRENCE.

Webster gives one of the definitions of this word to be "mutual action and reaction." Reciprocity is one of the natural laws — a law of our being, and one which manifests itself through all the ramifications of life.

The soil reciprocates the culture and care it receives in abundant crops. The clouds return in fertile showers the distillations received by imperceptible evaporation; and all horticultural products reciprocate in proportion to the care and skill bestowed upon them.

But this law of reciprocity applies socially as well as physically, and as this Society has but little business on its hands at present in the consideration of the fruit question, it may not be amiss to consider briefly one of the social reciprocal duties, viz., that of pleasing.

It has pleased God to place us in a pleasant world, among pleasant people, with pleasant surroundings, with pleasant sights to delight the eye, with pleasant sounds to please the ear, and with a beautiful, ever-varying and endless variety of pleasant things to gratify every want and taste. Therefore, being so abundantly blessed with pleasant things, we ought to endeavor to please others; and if we do not, we are boors and not benefactors, barbarians and not Christians. Therefore, we ought thoughtfully to inquire how we can reflect back to others those pleasant sensations we ourselves receive through the luxuries of Providence.

How can we please the men? Not cross, morbid, selfish, exacting, suspecting, censorious, featherless bipeds in hat and boots; but good, fair, honest, liberal, upright men, who think, and weigh, and discriminate, and who will give us just such a place in their confidence as we deserve. We may decide how to please them, by reflecting on what pleases us. A man pleases us by being just what he seems to be. He may not be great; the violet is not great, yet it pleases. He may not be wealthy; the Carpenter's Son was not wealthy, yet he pleased. If he picks our berries, digs our potatoes, gathers our apples, milks our cows or builds our houses—no matter what his business may be, if he honestly and faithfully performs his work, he pleases us. It therefore follows that if we expect to succeed in pleasing others, we must be just what we profess to be ourselves. We must not advocate temperance, and tipple; hold up truth and veracity, and constantly break the ninth commandment. In a word, we must not preach one thing and practice another. We must be true, if not towering; genuine, if not gorgeous. In this, and in no other way, we shall succeed in pleasing good men.

But how shall we please the ladies? "Aye, there's the rub!" They certainly please us, and it follows, therefore, that we ought to please them. But the task, though ever so delightful, is not so easy. A woman's tastes are so discriminating, her perceptions so keen, she scans one so minutely and critically, that the task of pleasing requires more thought, care and effort. A man will ask the price of our fruit, but will not notice our hat or boots. But a woman quizzes us so from head to foot, putting us under such imperative necessity of being tidy and cleanly in all our personal habits. But here comes the rub: if we please the ladies we must be good-looking. "Great Cæsar!" exclaims one, "as well might Biddy attempt to level down Mt. Oread with her rolling-pin, or Archimedes to move the world with a crow-bar, or a land monopolist to dry up its waters with a foreclosure, as I to make this plain rude structure wear even the semblance of good looks. If I scan my nasal protuberance, even without the aid of a mirror, I am impressed with the gigantic scale of the universe; and if I gaze downward to my pedal extremities, I discover how much our arithmetic is at fault in teaching that twelve inches make a foot. Must I then be deprived the pleasure of pleasing the fair sex, simply because the graces failed to visit my cradle, and bless me with good looks?"

My horticultural friends of the sterner sex, let us reflect a moment before we despair. What are the facts? There is our mutual friend A., who lives —never mind the exact spot—not 1,000 miles from here. When measured by any standard of beauty, he certainly is not handsome. His head bears a marked resemblance to a full-grown Missouri pumpkin; his ears would do ample justice to Milt. Reynolds's renowned mule; his nose has a "turn-up" sufficient to hang a bushel-basket of fruit on, without the least risk of slipping off; his mouth is so capacious, that when he laughs, one involuntarily exclaims, "What an opening for a young man!" He is hunchbacked, knock-kneed, and his toes turn out at an angle of forty-five degrees, and yet all the ladies call this man good-looking. What is the secret? What the explanation? It must be because he is chatty, jovial, pleasant, considerate, kind, good-natured, frank, cheerful, pitiful, gentle, forgiving, and generous. He has pleasant things to say about all his neighbors, but no unkind ones. His whole life is one continued benediction. This, then, is why the ladies call our mutual friend A. good-looking. We may not be handsome, but we may become good-looking in the same way, and then we shall please the ladies.

Hence it will be seen, that in order to please the men, the possession of those sterling virtues—honesty, reliability, and uprightness—is absolutely necessary; while to please the fair sex, those finer virtues—sociability, amiability, and generosity—must be brought into requisition. The face takes on the form and features of the soul. "We may set painters at work on our faces, not with rouge, carmine, amber, and arsenic, but let them begin down deep in the hidden chambers of the soul, and fresco them with more than Raphael genius."

MEETING HELD IN THE NEW EXPOSITION BUILDING, KANSAS VALLEY FAIR ASSOCIATION GROUNDS, AUGUST 16, 1879.

President M. **Sedgwick** called the meeting to order.

ORCHARDS.

There is no perceptible change in the prospect for winter fruit since the last meeting. The Winesap and Ben Davis varieties are coloring up very early, and it is presumed they will be marketable quite early in the fall.

Mr. Coleman called attention to the fact that some kind of bird was preying upon the apple, injuring it quite seriously, and inquired if anyone could tell the name of the bird. Others had noticed the same effects on their apples, but as no one could describe the bird, a committee was appointed to investigate and report at the next meeting.

Several of the members reported that the beetle of the round-headed borer was unusually active in depositing its eggs and the young borers are beginning their work of destruction. Every orchardist is admonished to look well and often to his trees, and root out these pests before they do much damage. Neglect is certain ruin. Eternal vigilance in this matter is the price of healthy trees and sound fruit.

It was also reported that the "twig blight" is very prevalent the present season, the cause of which is not positively known. It is generally considered, however, to result from atmospheric causes. Mr. Griesa has a remedy for this disease, which is to hang up in the affected tree bottles of carbolic acid, which he believes will effectually prevent the blight.

E. D. PETTINGILL, of Black Jack, called attention to two varieties of apples which he considers quite meritorious, and which are almost ignored by the most of orchardists. They are the Bailey Sweet and the Michael Henry Pippin. He thinks they ought to be more generally propagated.

The merits of the Smith's Cider apple were then discussed. Some of the members thought it was the worst tree we had for blighting, while others dissented, alleging that location more than variety influenced blight.

DR. EVATT thinks the Smith's Cider one of the best and most profitable apples we have. The Kansas Keeper is another variety that is said to blight badly; but in some places even this tree escapes.

MR. COLEMAN reported that there was not the least blight on his Kansas Keeper.

MRS. PAUL R. BROOKS was introduced, and delivered a very interesting essay on flowers, which she prepared, by invitation, expressly for this meeting, and for which she received a unanimous vote of thanks.

ESSAY.

In accepting an invitation to write an essay upon floriculture, I appreciate the difficulty of presenting the subject in any new light, or in giving any new facts relating to the propagation and culture of flowers. My own experience has been comparatively limited, and the only qualification for the task I might claim, would be my partiality to all that pertains to the subject —and the subject is an old one.

"The first notice of a garden in the historical records of Rome, is that of Tarquinius Supurbus, five hundred and thirty years before the birth of Christ. Livy and Dionysius allude to one which adjoined the royal palace, which was embellished with a profusion of flowers, in which the rose and poppy predominated."

It is said that the Romans surpassed every other nation in the variety of floral decorations, and were prodigal in their use of the rose. To enjoy its delicate scent at their meals, they caused its leaves to be showered upon the table and placed around the dishes, and on festive occasions roses were showered upon the guests from the ceiling. The floors of banqueting rooms were also covered with roses, and couches were filled with the leaves. Flower markets existed in ancient as well as in modern cities. At Athens, a quarter of the market was devoted to them.

Flowers have been used for the adornment of the person and the decoration of houses on festive occasions from the earliest times, and India, China and Mexico have been famous for their cultivation.

We read of the famous floating gardens of the Mexicans, and of the great quantities of flowers used in the worship of their gods, and for funeral rites and marriage ceremonies. They also presented flowers on stated occasions to the king, and persons of rank. In India and China the Buddhists used flowers in great profusion in their religious devotions. "A royal devotee in Ceylon, in the fifteenth century, offered, on one occasion, over six million flowers at the shrine of the tooth." Sometimes a single flower was watched, worshipped and prayed over until it withered and died. Trees and shrubs were trimmed to represent animals, and then worshipped as idols. Their dead were decked with wreaths of flowers, and the funeral pile with leaves and blossoms.

"The gardens of Athens were remarkable for their classic elegance, adorned with temples, altars, statues and monuments, where some of the departed heroes reposed. It would appear that these gardens had some resemblance to our modern cemeteries."

Flowers were not merely a luxury to the Grecians, but were considered absolutely necessary, and they are necessary to us at the present day. If the cultivation of a taste for flowers is pure and elevating, can we overestimate its value to the family? It requires no study to enjoy the beauty of flowers, and *one* evidence of their good influence is the remembrance of them. I have heard persons say of such-and-such a flower, "We had that in the garden at home." It may have been long years since it grew in the old home garden, but it will never be effaced from their memory any more than the place where it grew. A bed of sweet-williams that years ago grew in my father's garden, will never be forgotten; even the scent of the flowers carries me home again. Horticultural societies are encouraging the cultivation of flowers, and newspapers and periodicals are constantly giving hints in regard to their culture. Artificial means have been employed for the cultivation of delicate plants prized for their flowers, far more generally than for any fruit-bearing plants.

The growing taste and increased demand for flowers are indicated by the number of floral establishments springing up all over the country, and private conservatories are no longer monopolized by the rich. In the cities, the cut-flower trade and extensive decoration almost equal the ancient Greeks and Romans. Last season in London, the decorations of dinner tables, it is said, reached a point where they presented the appearance of gardens, so that persons could scarcely see those on the opposite side of the table. The beauty of the parks in our large cities is greatly enhanced by the different styles of ornamental and carpet gardening. I saw in South Park, Chicago, a few weeks ago an arrangement of plants representing animals and birds, the shading and coloring being nearly perfect. Fine-leafed and low-growing plants are used in this variety of gardening, as also in scrolls and lettering.

But we must not leave the culture of flowers to city parks or rich people. With our soil and climate, the possibilities of flower culture are great. Twenty years ago the prairies of Douglas county were bright with many varieties of wild flowers, and to-day we can beautify our homes if only the common flowers are grown. The different varieties of phlox produce a large amount of bloom. The white is very useful in arranging cut flowers, and the bright-colored ones make a fine display in the garden. Every one admires roses. They are of easy culture in this climate, and the tender varieties will live through our winters with a slight protection. Among the hybrid perpetuals we like best the Washington and La France, although they cannot equal the color of the General Jacquiminot, but are better bloomers the last of the season. The beauties among tea roses are too numerous to mention; the fine tea scent of the Duchess de Brabent and Bon Silene, and the beautiful yellow buds of the Solferino, are always admired.

The more we study the culture of flowers, the more we find to delight us; but in all successful cultivation, either for the garden or the window, constant care is necessary.

It is practicable for every home to have flowers, and in proportion to the taste used in the selection and arrangement of varieties, and the care bestowed on them, will the result be satisfactory or otherwise. Practical information in regard to the growth and care of plants may be had for the asking; nearly all the prominent seedsmen and florists of the country issue catalogues that contain sufficient practical information to warrant success, if intelligently followed. But if we know how ever so well, and neglect to practice what we know, we may fail. If the soil is not properly prepared, we may sow the choicest seeds, or set the most vigorous plants, and we shall be most likely disappointed. If we have drouth, and use a sprinkler to moisten the top of the ground about plants, we shall do more harm than good. Either water abundantly or not at all. Specific directions cannot, of course, be given in a paper of this scope, but if possible I would impress upon all the idea that it is not a great amount of knowledge that is needed, but the practical use of information within the reach of all, that will produce desirable results in flower culture.

I hope I shall be pardoned for repeating the admonition so often given, of not attempting too much. Better succeed with a few well-chosen varieties, than half succeed or fail with a much larger number. But in some way have them about your home. Grow them for yourself and family, for your friends, and for the sick. Florence Nightingale speaks of patients suffering acutely from not being able to see out of the windows, and noticed a great improvement when a few bright flowers were brought them. The gratification of taking flowers to the sick-room has been no small part of the compensation to me for the labor and care given to the cultivation of flowers. To me, the meanest flower that blooms can give thoughts that do often lie too deep for tears.

FLORICULTURE.

A. Griesa called attention to a rose of the Bourbon family, called Appoline, which he claims to be a profuse bloomer, and worthy of general propagation.

There was also quite a handsome display of flowers on the table, among which was a very beautiful bouquet from the garden of Mrs. Brooks.

HANDLING FRUIT.

D. G. Watt strongly recommends assorting and grading fruit for market, as it gives more satisfaction and better returns. He claims that while a better price is obtained for the first grade, as much will be paid for the second as would be for the first and second grades mixed together.

The committee appointed to examine the fruit on the table reported as follows:

E. D. Pettingill—Apples: Wagener, Bailey's Sweet, and Michael Henry Pippin.

A. Griesa—Grapes: Elvira, Delaware, Agawam, Ives, Goëthe, Wilder, Dracut Amber, Lindley, and Telegraph.

D. G. Watt—Apples: Carolina Red June, Hightop Sweet, Cooper's Early White, Summer Queen, Pound Sweet, Maiden's Blush, Summer Pearmain, Rambo, Rome Beauty, and two varieties of crabs, the one Transcendent, the other not known.

O. H. Ayer—Grapes: Concord, Delaware, Catawba, Diana, Ives, Iona, Eumelan, Merrimac, Salem, and Dracut Amber.

E. A. Coleman—Apples: Rambo, Rome Beauty, Maiden's Blush, Summer Queen, Pound Sweet, Buckingham, Wine, Cole's Quince, Jonathan, Blue Pearmain, Lowell, Gravenstein, Fulton, Alexander, Porter, and two varieties unknown. Also, a quantity of luscious Concords, for the dinner table.

Mr. McClintock—Apples: Maiden's Blush, Buckingham, Lowell, and two varieties sent by him from Prairie City to be named.

A. Messenger—Apples: Alexander and Maiden's Blush.

Jas. Kane—Apples: Pound Sweet, Maiden's Blush and Summer Pearmain. Grapes: Concord, Dracut Amber, Ives, Diana, and Taylor.

S. Reynolds—Apples: One variety to be named, and a group of thirteen, of the Lady apple, on a twig six inches long.

Adolph Griesa,
N. O. Stevens,
Wm. Miller,
Committee.

Uncle George Ford, the veteran horticultural friend, donated the Society a gigantic watermelon, which was as good as it was large. May neither his watermelon patch nor his shadow ever grow less.

MEETING HELD AT THE RESIDENCE OF WILLIAM CRUTCHFIELD, SEPTEMBER 20, 1879.

E. A. **COLEMAN** was called to preside.

ORCHARDS.

JOS. **SAVAGE** called attention to the fact that several of the trees in his orchard were putting out bloom and setting fruit on the new wood, and called upon Mr. Brackett for an explanation.

MR. BRACKETT: After trees have "gone to rest"—which occurred very early the present year—it quite often happens that they put out bloom if autumn rains occur, but these generally are from the terminal bud.

MR. KANE has noticed the same phenomenon on his pear trees, but the young fruit all dropped off.

MR. FLORY, of Willow Springs, has a second growth of pears that is trying to mature.

MR. PETTINGILL, of Black Jack, thinks it a common thing for the Rome Beauty to bloom the second time.

MR. BRACKETT exhibited a seedling that originated in his father's orchard which possesses great merit as a baking apple. He calls it "Brackett's Seedling Sweet." He here went into a discussion of the merits of several leading varieties of apples on the table. This year the Rawles Genet comes to the front, bearing more fruit than all other varieties. Kansas must not ignore it, if it did originate in Missouri. It usually bears full on alternate years, and a partial crop the other seasons. It is an excellent keeper, juicy and good in quality, and ought to be found in every Kansas orchard. The Missouri Pippin is a poor apple, and it is difficult to educate the appetite up to an appreciation of its taste; but on account of its hardy nature and habit of early bearing, it is emphatically a pioneer apple, and should be grown by all new settlers till better ones can be raised to replace it. He extols the Winesap, placing it first on the list of winter apples. It combines fine qualities and good looks with great productiveness. If the fruit should retain its good size and quality as the tree advances in age, it will prove itself the best variety yet propagated. Mr. Brackett exhibited two plates of the Seckel pear—the one lot grown on thin upland soil, maturing and coloring up much earlier than the other, which was grown on deep black loam, showing that fruit is influenced as much by soil as by location and climate. There is much to learn yet in the adaptation of fruit to soil, location and climate, and conditions vary so much in different places, that no general rule can be given that will be applicable for all. To a certain extent, everyone must make his own experiments, and decide for himself.

It was stated that Mr. T. D. Thacher had said, "Your Kansas apples are very handsome, but they lack the fine flavor of the Eastern fruit." This brought out a discussion of their relative merits.

Mr. Coleman produced evidence that Kansas apples exceeded those of the East in all respects.

Mrs. Joseph Savage, who has recently returned from a visit to the Eastern States, declares that she saw no such fruit for size, beauty and flavor from New York to Maine, as is grown in Douglas county.

Fine specimens of the Jonathan were shown, which is acknowledged to be the best fall apple ever propagated. Attention was called to the fact that in some seasons a meritorious variety may, from some unexplained cause, prove very inferior to its usual character—which was the case with the White Winter Pearmain last year—but that it should not be depreciated on that account, as such instances may not occur but once or twice in the lifetime of a tree.

FRUIT ON THE TABLE.

The President appointed Messrs. Brackett, Johnson and Kane to examine the fruit on display, who reported as follows:

E. D. Pettingill—Apples: Cole's Quince, Red Winter Pearmain, Rome Beauty, Esopus, Spitzenberg, Michael Henry Pippin, Jonathan, Bailey's Sweet, Winesap, Smith's Cider, Talman's Sweet, Grimes's Golden, Willow Twig, Hunt, Wagener.

G. C. Brackett—Apples: Seedling Sweet, Bonum. Pears: Seckel.

Jos. Savage—Apples: Fameuse, Smith's Cider, Hughes's Crab, Michael Henry Pippin, Rawles Genet, Rome Beauty, Soulard Crab.

Wm. Crutchfield—Apples: Rome Beauty, Winesap, Missouri Pippin.

E. W. Flory—Buckingham, Hubbardston Nonsuch, Northern Spy, and one variety unknown.

FLOWERS.

Mrs. Burlingame, Mrs. Foster and Mrs. Apitz very handsomely decorated the tables with flowers and foliage plants.

VINEYARDS.

A grape called the "Martha" was mentioned by Mr. Brackett. In 1874 it withstood the grasshoppers and drouth where the Concord succumbed. He considers it superior to the latter, and ought to be cultivated. It is generally conceded that the Concord is the grape for the "million," because of its easy culture, its hardiness and other good qualities. Many of the fine-flavored varieties are hybrids, crossed with tender exotics, and cannot therefore withstand our climatic influences.

Mr. Ayer, of Wakarusa, has been very successful in growing the Catawba, Delaware, and other choice varieties; but his location is exceptionally favorable for grape culture.

ENTOMOLOGY.

MR. BRACKETT said, in speaking of the borer: "You have been badly bored by the borer, yet still not quite so badly as your trees, for many of them have been bored to death." It has been his observation, that whenever or wherever trees have been wrapped to protect them from the incursions of the borer, the insect has made an "oviposition" above the protection, and often as high as the forks of the tree. The conclusion therefore is, that wrappings are of very little or no use, the knife and its auxiliaries being the only sure reliance for the destruction of the insect.

He exhibited a specimen of a new insect that feeds upon the foliage of the strawberry. From wing to wing it measures three-fourths of an inch, and is one-half inch in length. He cannot find any description of it in any of the authorities. While scientists are of great help to the horticulturist, it will always devolve upon the fruit grower himself to carry out their teachings to practical results.

DR. O'NEIL, of Black Jack, paid his initiation fee, and was admitted to full membership. He said for years he has been interested in the doings of of the Society, and has regularly read the reports of its proceedings, but at last concluded to make one of the number. He believes the Society has done, and is still doing, incalculable good for the cause of fruit growing, not only in this county, but wherever the reports are read, and they are read very extensively; he considered it both a duty and a privilege to be a member of such a society.

MUSIC.

The Old Settlers' Band, under the leadership of Mr. Worcester, enlivened the exercises with excellent music.

The October meeting will be held in the University, as the season is too far advanced to risk any more grove meetings.

The meeting throughout, and in every particular, was a very pleasant one, and all were more than ever impressed with the great importance of the industry, whose interest this Society, in its organized capacity, is laboring to advance.

MEETING HELD AT THE SOCIETY'S ROOMS IN THE UNIVERSITY BUILDING, OCTOBER 18, 1879.

E. A. **COLEMAN** in the chair.

ORCHARDS.

On this subject Dr. JAS. **MARVIN** favored the meeting with some practical remarks, taking the position that if the horticulturists of Kansas expect to realize great success, they must introduce and propagate fruits adapted to the peculiarities of the Kansas climate, which can only be done by diligent and practical experiment. For instance, the Greening apple may be No. 1

in New York, and in Kansas almost worthless. One variety may, in the Eastern or Middle States, prove itself a good keeper, maturing and mellowing in the cellar, while in Kansas the same variety may ripen and mellow upon the trees, thereby losing all its keeping properties. As most of the horticulturists of Kansas grow fruit for market, large size and good looks should also be taken into account. We should start new varieties, either by seedlings or fertilization, or both, and if they had merit they would be received West and South, even if rejected East. Then we must learn how to defend our fruit against insects. In order to do this, it is not necessary to traverse the whole field of entomology. We must concentrate our thoughts on the study of the unfriendly insects found in our own orchards. The borer, the codling moth and the tree cricket are the principal enemies we have to fight, and the sooner we learn how to exterminate them the better.

G. Y. **JOHNSON**: Am fearful that the late warm weather will not only injure the prospect for next year's crop of fruit, but prove damaging to the trees themselves. However, this may depend upon the character of our subsequent fall weather. I estimate that not less than one-fourth of the apple crop is rotting, being the result of both the depredations of insects and the recent excessive warm weather. I refer to a seedling found in Hon. S. A. Riggs's orchard that cannot be distinguished from the Spitzenburg. If we could propagate a Kansas apple that possessed the size of the Missouri Pippin, the fruitfulness of the Rawles Genet, and the fine quality of Grimes's Golden, we should have an apple much nearer perfection than we have at present.

N. P. **DEMING** said that before the late rain his Rawles Genets were sound on the trees, but they immediately cracked open after the rainfall.

O. H. **AYER** has but few apples, and they are rotting badly. The Rambo is liable to crack after much rain.

E. A. **COLEMAN** stated that Oliver Barber has produced the Rhode Island Greening in as fine condition as any found in New York. Much depends upon location.

MR. SMITH, of North Lawrence, has been more successful with the Rhode Island Greening than with either the Ben Davis or Rawles Genet.

E. A. **COLEMAN**, to illustrate a point that Dr. Marvin made, viz., that we must grow apples that will sell well, held up three apples, saying that last year he saw three loads of apples drive up to Kesting's containing the three kinds he held in his hand. The first was a load of Rawles Genet, for which was offered 52 cents; the second load was Missouri Pippins, for which 70 cents were offered, and the third Ben Davis, for which 75 cents were offered. Now every one knows that the Genet is much the best apple of the three, in all respects, except in looks, while the Ben Davis is the poorest in quality. As long as people *will* buy apples with their *eyes* instead of their taste, we must endeavor to please them.

ENTOMOLOGY.

N. P. Deming exhibited a specimen of a tree cricket. This insect has done much damage to the apple crop the present season, by puncturing the fruit, causing it to rot. It deposits its eggs in the limbs of apple and other trees. The only mode of destruction now known, is to cut off the limbs or twigs and burn them. He also exhibited what he supposed to be a beetle of the peach borer, but it was not clearly identified. We have 7,000 school children in this county, who ought to study entomology. The subject must be brought into the common school.

METEOROLOGY.

Prof. F. H. Snow furnished the Society with a synopsis of the mean temperature of the weather of the first half of October for the last ten years. In 1869 the average temperature was 49°, while in 1879 it was 71.84°, making a difference of nearly 23°. Such an unprecedented high temperature for October must have a marked influence upon vegetation.

It was stated by several persons that trees were still growing, and the bark of the peach tree slipped as readily now as it usually did on the 1st of August.

The rainfall for the year thus far has been six inches below the average.

Miss M. L. Macy was called upon for a literary production, and favored the meeting with the following

ESSAY.

"With what a glory comes and goes the year!
The buds of spring, those beautiful harbingers
Of sunny skies and cloudless times, enjoy
Life's newness and earth's garniture spread out;
And when the silver habit of the clouds
Comes down upon the autumn sun, and with
A sober gladness the old year takes up
His bright inheritance of golden fruits,
A pomp and pageant fill the splendid scene.
There is a beautiful spirit breathing now
Its mellowed richness on the clustered trees,
And from a beaker full of richest dyes,
Pouring new glory on the autumn woods
And dipping in warm light the pillowed clouds.
Oh! what a glory doth this world put on
For him who with a fervent heart goes forth
Under the bright and glorious sky, and looks
On duties well performed and days well spent!
For him the winds, aye, and the yellow leaves,
Shall have a voice and give him eloquent teachings."

Like a tired child after a day's ramble in the woods which has been long looked forward to, longed for, who is glad to get home to his mother at night, so we, after a summer's ramble here and there, are glad to be housed once more within these friendly walls. But now the question comes home to us, what have we gathered in those pleasant rambles here and there of value to ourselves and others? Have we brought home that which will furnish mental food which will be strengthening and grateful during the months of our stay here again? If so, what is it? Our minds and tastes are varied, and would gather and grasp a variety. So let us now as one family spread a mental table, and all bring what has been gathered.

So the first that I will bring will be one which is too heavy for me to carry alone. When I think of those grand views which come upon us here and there, at every turn in this county, my pencil involuntarily stops, my eye closes, and I drink again the beauties of a Douglas county landscape.

We don't consider that it takes, essentially, an elegant mansion and extensive lawns to make a beautiful home, nor does it consist in one without the other; but when blue-grass and hedges are so easily grown, and within the reach of all, we ask again and again, "Why don't they have a *home?*" Make neat and tidy the house you have, if you are not able yet to build a better one; grow a hedge around it, and cover your yard with *grass.* Sometimes my mental occupation is the distribution of neat country villas, and their yards of *green.* Everywhere we see, seemingly, the labor of art anticipated by nature. If I had but the power of dotting this country, by the wave of a wand, with home surroundings as they should and could be, what an Elysium we should have! When we look back and think what a smooth, green carpet, studded with flowers, did once spread out a revelation of God's love, as bright as the stars above, we involuntarily exclaim, "Oh! what a desecration;" and we look off on the far-away spread of some yet grassy plain, and think of how that abounds in capabilities, and wonder, "Will they add to nature the works of art, or spoil her handiwork?" When we see with what ease and little expense some people make more beautiful these grand old hills and vales, we ask ourselves the question, is there no way by which every one can be made to feel of that which is home-like and beautiful in their surroundings? Can't we devise some means by which we can reach this class of our community?—and certainly, if anything can be done, now is the time to commence. In the winter the farmer has the most leisure to clear up his farm, and look around and see what is needed to be done to shape things up for spring.

We have all the natural facilities requisite to make this county one of the most beautiful in all our Nation, and I believe it can be done if only thought and energy are put to work. It is not a work to be accomplished in one winter, but the gradual growth of years. Full of this desire to make our county "a thing of beauty and a joy forever," that those who hear of it will come and see for themselves, and when gone again say that "the half had not been told," and, "though lost to sight to memory dear," knowing of a society in Massachusetts which has for its object just such an enterprise as this, only commenced in order to beautify a village, but whose influence has gone out for miles around, and the locality is known as one of the most beautiful and tasteful in all the earth, I wrote to the secretary of the society, asking a plan of their work, and received a statement which will be given at some future meeting.

FRUIT ON THE TABLE.

A very handsome display of apples was made, as follows:

E. A. Coleman: Missouri Pippin, Willow Twig, Grimes's Golden Pippin, Ben Davis, Rome Beauty, White Winter Pearmain, Winesap, Nonsuch, Sweet Romanite, Fameuse, Lawver, Fall Winesap, White Pippin, Roman Stem.

Joseph Savage: Stark, Wine, Missouri Pippin, Willow Twig.

S. Reynolds: One unknown variety, to be named.

Mr. Coleman also exhibited a branch cut from a beautiful ornamental tree, which has blossomed and seeded the present year for the first time. The tree is seventeen years old, and its indigenous home, Japan. The foliage and seed-pods are most beautiful, and entirely different from anything ever before brought to the notice of the Society. He calls it Sophora Japonicus.

At an early hour the meeting adjourned.

MEETING HELD AT THE SOCIETY'S ROOM, UNIVERSITY BUILDING, NOVEMBER 15, 1879.

E. A. COLEMAN presiding.

ORCHARD PRUNING.

MR. BRACKETT introduced this subject by remarking that "to train up an orchard in the way that will meet our highest expectations, and at the same time adequately replenish our pockets, is, and ought to be, the aim of every horticulturist." He is convinced that there is a system of orchard pruning which must be adopted and practiced, in order to realize the finest fruit and best results. Many of the orchards in this county are not pruned at all, the twigs and "water sprouts" being allowed to grow so thickly that it is with difficulty a person can crawl under or climb into the tree. The consequence is, that light and air are excluded from a large portion of the fruit, rendering it inferior in quality, diminutive in size, and depriving it of its natural beauty. It is true that some varieties, such as the Red Astrachan, Ben Davis, Dominie, and a few others, require but little pruning to put and keep them in symmetry; but even these must be started right, and in after-growth, all superfluous twigs and sprouts annually removed. The Winesap, Rawles Genet, Willow Twig, and many other kinds which have the habit of sending out numerous sprouts, and spreading their branches almost horizontally, should not only have their heads started some two feet from the crown, but should be kept sufficiently pruned to prevent the interlocking of limbs, and also to admit light, and a free circulation of air to all portions of the tree.

Mr. Brackett gave the Society a few "facts and figures," upon which to reflect. In 1877 he pruned 600 of his 800 Rawles Genet trees, using the knife pretty freely. The press of other business prevented his completing the work at that time. In the following spring of 1879, the pruning was resumed; but finding all the lower limbs and twigs loaded with fruit buds, and believing that that variety was the only variety that would bear a full crop that year, his "pruning courage" failed him, and the most of the 200 trees were allowed to grow at will. The result this year (1879) was a fine crop of large, handsome fruit on all the trees pruned, while the unpruned trees yielded a crop of small, inferior and unmarketable apples. The Rawles Genet has been kept below its standard quality by the neglect of proper pruning, and its deserved reputation has consequently been withheld.

MR. COLEMAN adduced facts which corroborated Mr. Brackett's statements. Before his orchards came into bearing, he was in the habit of going to Missouri every fall for apples, and he always found that the orchards which were kept well pruned produced the largest and best fruit. He instanced one orchard in particular, in Platte county, which was taken good care of, and kept well pruned, where the fruit was much superior to any found in unpruned orchards, with similar soil and location.

MR. KANE: The nurserymen are in fault by not starting the young tree right while in the nursery-row. "Train up a child in the way he should go" applies as much to the young apple tree as to the human twig. "As the twig is bent the tree is inclined" is a truism the nurseryman ought not to ignore. The young tree should never be allowed to "fork," but the twigs must be started laterally from the main stem.

T. A. STANLEY: It is a great mistake to plant peach trees between apple trees, as the former, by their more rapid growth, take the substance from the soil needed by the latter.

SMALL FRUITS.

All kinds and varieties of small fruits are full of blossom buds, but there is a general disposition to premature development. Mr. Brackett, who is Secretary of the State Horticultural Society, and consequently in communication with all portions of the State, stated that this was especially the case in the southern counties. In some portions of the State bloom has appeared, and even fruit formed, and many are fearful of serious consequences. On his own grounds, strawberries are in blossom. However, it is not likely that enough bloom will be developed to materially injure the next year's crop of fruit.

VEGETABLE GARDENING.

MR. COLEMAN is very grateful to the Society for placing him at the head of the Committee on Vegetable Gardening, and for the third time tendered his thanks for the honor conferred and benefits received. His position on that committee required him to set an example in good gardening; the result is, his cellar is full of potatoes, cabbages, squashes, and other vegetables, besides having large quantities buried up for market. In reply to the question, "How can cabbage be kept from cracking open?" he recommends pulling the stalk just enough to loosen the roots; this will check the growth, and prevent cracking.

MR. SEDGWICK has just gathered some five hundred bushels of Peachblows. He attributes his good crop to late planting and thorough culture, keeping the ground well stirred in dry weather.

NEW FRUIT.

It is thought the "Cooper" will prove a very valuable apple. There are six other new varieties that promise well, prominent among which is the "Kansas Queen," originated by Mr. Burr, of Leavenworth. It is a fall apple, and very highly colored. The Lawver, another new variety, is a beautiful seedling of the McAfee Nonsuch, and if it should prove sufficiently productive, will be the "coming apple."

A circular letter from the Secretary of the State Society, requesting this meeting to send delegates to the thirteenth annual meeting of that Society, to be held at Holton on the 16th, 17th, and 18th proximo, was read, and on motion, Joseph Savage, E. A. Coleman and Samuel Reynolds were unanimously chosen as such delegates.

The following statement of the weather for the last month, prepared by Prof. F. H. Snow, expressly for this report, is duly appreciated, and given under the head of

METEOROLOGY.

LAWRENCE, KAS., Nov. 15, 1879.

The most important feature of the weather during the past four weeks, has been the abundant rainfall of the present week. Rains fell on the 8th, 10th, and 11th instants, measuring respectively 1.15, 0.55, and 2.10 inches, and giving a total rainfall for the month thus far, of 3.80 inches. This is more than double the average amount for the entire month of November for the past past twelve years, and exceeds the highest previous November rainfall of our record. There have been only seventeen days in the past twelve years on which rain has fallen to the depth of two inches, as on the 11th inst.

The abundant rains of the past two months seem to falsify the dry weather predictions of certain Kansas meteorologists, who maintain that the source of our Kansas rainfall is to be found in the snows of the Rocky Mountains. According to these authorities, if the snows are abundant, the rains in Kansas will be abundant in the following season; and a deficiency of snow in the mountains will be followed by a corresponding deficiency in the Kansas rainfall. In my own opinion, we must look to some other quarter for the source of our Kansas rain.

The exercises were enlivened with good music by Miss Kate Smeed, Miss Annie Yarnold, and Samuel Reynolds.

Mrs. Rottman furnished the table with a beautiful bouquet of geraniums and chrysanthemums of several varieties.

MEETING HELD AT THE SOCIETY'S ROOMS, UNIVERSITY BUILDING, DECEMBER 20, 1879.

President SEDGWICK took the chair, and announced that the

ANNUAL ELECTION

Of officers for 1880 would be the first business.

The election resulted as follows:

President—D. G. Watt, Lawrence.

Vice President—E. A. Coleman, Kanwaka.

Secretary—Sam. Reynolds, Lawrence.

Treasurer—O. H. Ayer, Lawrence.

The delegation representing this Society at the thirteenth annual meeting of the State Horticultural Society, held at Holton on December 16–18, 1879, made, through E. A. Coleman, a very interesting report of the work of that meeting.

On motion, the expenses of the delegates were allowed, and ordered paid.

President Watt was conducted to the chair by E. A. Coleman and N. P. Deming, who were appointed for the purpose.

The newly-elected President entered upon the duties of his office promptly, by announcing the

STANDING COMMITTEES FOR 1880.

Orchards, S. W. Pearson, Lawrence; Small Fruits, P. Underwood, North Lawrence; Entomology, A. H. Griesa, Lawrence; Floriculture, Mrs. F. M. Burlingame, Lawrence; Marketing Fruits, E. A. Coleman, Kanwaka; Meteorology, J. Savage, Lawrence; Lectures and Essays, Miss M. L. Macy, Lawrence; Vineyards, M. Sedgwick, Lawrence; Nomenclature, G. Y. Johnson, Lawrence; New Fruits, G. C. Brackett, Lawrence.

The following paper was prepared, and read by invitation:

HEALTHFUL AND BEAUTIFUL HOMES.

BY MRS. F. M. BURLINGAME, LAWRENCE.

"Be it ever so humble—
There's no place like home."

Yet there are great differences in the qualities of home. Some homes are sanctuaries, some mere places to eat and sleep. The importance of home influence and surroundings cannot be overestimated. All that we are and are yet to be—our lives, natures, success, and happiness—depend largely upon the character of our homes. Good homes, wherein cheerfulness, beauty, naturalness and purity abide, produce better citizens than cheerless, affected, or unattractive homes. The homes of to-day are making or marring the characters of our future men and women.

The farmers, horticulturists and housekeepers who are to step into our places, are now learning their first lessons under their father's roof-tree. In view of these facts, I heartily second Miss Macy's proposition for some organized effort for the improvement of country homes. Having been kindly and earnestly requested to prepare and read an essay on the subject of home improvement before this Society, I will endeavor to offer a few useful hints. Home improvement includes not beauty alone, but also healthfulness, comfort and convenience. Healthfulness is the first consideration. An ancient castle, densely shaded by aged oaks, its windowless turrets moss-grown, and its broken battlements ivy-crowned, is an exceedingly beautiful and picturesque object to the eye; but its damp pavements and sunless rooms would prove detrimental to health, and its winding stairs and rough walls would be inconvenient and uncomfortable to the modern housekeeper.

The sanitary condition of homes in populous cities is now engrossing the thoughtful attention of many philanthropists. Disease and death lurk in the drain and gas-pipes of the palatial mansion, and in narrow halls and dark, unventilated rooms of crowded tenement buildings; and how to avert these evils is one of the gravest practical problems of to-day. The draining of villages, the disposition of their garbage and situation of their compost heaps, are being earnestly discussed; and the residents of many villages and towns have organized coöperative associations for the purpose of promoting the healthfulness and attractiveness of their respective localities. The sanitary condition of country homes receives little consideration, because it is presumed that they are exempt from the evils that afflict more populous districts. Yet we all know that through ignorance or carelessness the health and life of dwellers in farm-houses are frequently endangered. Poisonous vapors may arise from damp, unventilated cellars, and permeate the rooms above. Ague-creating malaria may be generated in patches of decaying weeds, and death-dealing fever germs may find their way from noxious compost heaps to wells and springs near by. It seems to me one of the first works of an improvement society would be to inform and caution farmers regarding these matters, that they and their families may have a stronger and longer lease of life.

The arranging of the house and the locating of the out-buildings with regard to the comfort and convenience of the women of the household is a matter that does not receive half the consideration it needs. Weary housekeepers walk miles at their household work, to and from the well, cistern and wood-house, which might have been avoided by proper attention to arrangement. But perhaps the most gross neglect of comfort of which country women have reason to complain, is the lack of dry walks around the house. During the muddy season the only way to reach and leave many houses is by bravely wading. In behalf of those women to whom dry feet and clean floors are matters of consequence, I would urge that we labor to improve country homes in this respect, and persuade the men of those mud-stranded houses that walks can be made of boards, sand and gravel, coal ashes and cinders, and bits of flat stone. The walks need not be wide and expensive, nor difficult to keep in order; a narrow foot-path will serve, if it is high, hard and dry.

Having made our homes healthful, comfortable and convenient, our next work is to make them beautiful. We are aware that there is need of much work in this direction throughout our country, thrifty and prosperous as it is. Looking among our farmers who own the 60 or 160 acres, we find some who can see nothing profitable in beautiful surroundings. The farmers of this class have a comfortable home, perhaps, but the pigs and cattle graze around its door, and he lives on, year after year, seemingly with no desire above the political news, the rise in the hog market, and the prospect of the corn crop. And if his wife does not turn those pigs and cattle into the back pasture, plant tufts of blue-grass sod, make a flower bed, and let a geranium grow in the window, she will, in time, become as earthly as her liege lord, "blind to the beauty everywhere revealed." I assure her if she perseveres with her grass and flowers and vines, she will not have to wait long for a pleasant remark about the flowers, and expressions of surprise at the rapid growth of "our" blue-grass. "Flowers are the sweetest things God ever made and forgot to put souls into," for they have a language that human beings soon learn to understand by association, and through their marvels and mysteries of fragrance, form and color, He refines and elevates the human soul. It is impossible to associate with flowers and plants and not be ennobled by the influence they possess over us.

Glancing again through our country, we find land-owners who rent thousands of acres in 60, 100 and 160-acre farms. The tenant is furnished with a rough little house, set in a bare field, and no inducements are offered for him to improve the surroundings. In the early spring days, while the ground is yet too cold to plant his corn, he has leisure afternoons, and he says to his wife, "If this place were my own, I would fix up the yard some to-day, sod around the front door, and plant some trees, but I cannot afford to improve another man's property when I am paying an honest rent—that is sufficient." So he romps with the children, or calls on his neighbors, and for a time forgets the bare surroundings. In such a place there live, perchance, a gracious woman and a group of interesting children. As the mother looks out upon the unattractive surroundings she sighs, because they have to wait so long for a *home*, and wishes for the children's sake that they might have a shade tree, and a little yard or garden for flowers. With a ready instinct to make the most of what is within her reach, she plants the seed of some favorite flower in an old fruit-can, and with the children, eagerly watches the result. Their hearts thrill and throb over this bit of beauty, the only one the spot affords, gradually perfecting the refinement of their natures by the sweet inspiration of the unfolding leaves, and development of fragrant blossoms. A finished piece of divine beauty, and "a joy forever."

This is no overdrawn picture; you have seen its counterpart many times. We are thankful our land-owners and renters are not all like these I have just mentioned. There are tenants who will have a bit of green-sward, a nook for flowers, and vines over their temporary porches, for their own sweet sake. And there are enterprising landlords who offer a reward for the planting of trees, and the covering of the lawn with a blue-grass carpet. Men and women must have an incentive to employ all their leisure moments well; and different persons are governed by different motives. To furnish such motives as will inspire farmers and their wives, land-owners and land-renters with an enthusiasm for thrifty orchards and vineyards, green lawns and shade trees, flowers and vines, will constitute a portion of the work of a horticultural, or improvement society.

There is another phase of our country's landscape, which at no distant day will demand our earnest attention as well as our homes, namely, our public roads. I read once, that in Spain whenever a traveler refreshes himself with an orange or a peach, or other luscious fruit, he stops, and in accordance with a time-honored custom, plants the seed by the road-side, and as a natural consequence all the highways and byways of Spain are lined with fruit trees.

APPLIED ÆSTHETICS.

Prof. James H. Canfield, of the State University, having been invited to address the meeting, kindly responded, to the great pleasure and satisfaction of the Society. He spoke entirely without notes and with very little preparation, as the invitation was extended but a very short time before the meeting convened. We do not pretend to give a full or exact report — merely attempting to cover the ground as fairly as possible from a few hurried notes.

After laying upon the shoulders of the Secretary the blame of his appearance there, intruding upon grave men and grave themes, he spoke briefly of the changes which had taken place in educational measures, even within the last quarter-century. Formerly there was much Latin and Greek; a very little science, generally taught by unscientific men; and just enough theology to send most of the graduates into the world with their religious convictions all awry. Now, especially in the West, educators sought to broaden and deepen all the currents of a man's life, that he might bear blessings immediate and most tangible to all with whom he came in contact. This practical beneficence was sought by our own University in every department. The object was to fit the man to touch with quickening, sympathetic power the greatest possible number.

The people of the State, even of this county, know far too little of this work and the means by which this end is sought. Were they better informed, they would look with even more pride and affection on the University, and this appreciation would quicken every effort there and add to its efficiency.

The speaker then stated, which was a pleasant surprise to most of his audience, that in his own department, under the topic "Æsthetics," during ten weeks of the senior year, the instruction — which took largely the form of conversational discussion — included the fine arts, so called, dwelling particularly on landscape gardening and domestic architecture. He would be glad to outline that instruction, though he could do nothing more, in order that the work might be fairly criticised by those who were so deeply interested in it as his hearers.

In a purely conversational way, he then outlined his work about as follows:

The three things sought in the dwelling are shelter, comfort, and the gratification of taste. This is the natural order. Beyond this no dwelling has a right to go. The palatial residences of our more wealthy citizens are evidences of both bad taste and bad morals. The dwelling of an American citizen should be first and last preëminently *a home.* Anything more than this is not in accordance with the genius and spirit of American institutions. The key-note of our government was *coöperation.* Without this, none of our educational work could be done—no law could be made or enforced—there could not be advancement in any direction. The man who builds for himself a palace, sets himself in opposition to this principle, calls attention to his moneyed superiority, provokes unworthy emulation, draws sharply the line between himself and the great mass of mankind, and shuts up capital which should be producing rather than decaying. The difference between $8,000 or $10,000 in a *home,* and $80,000 or $100,000 in a mass of stately marble—cold, uninviting, and even repellant—would, expended in productive energy, be a giving, which would be a getting, in both wealth and blessings to the man and to his children, and an untold beneficence to employés and the community at large. Moreover, with us wealth changes hands once in three generations at least, and a man should build in such a way that his children may emulate his example, or be able to maintain the home bequeathed them. The great middle line—that line of average life and effort—is the wisest and best rule here as elsewhere.

The prime object in house building is *utility,* and to this all else must be sacrificed, if necessary; certainly, before this all mere ornament should give way. The home of the truly cultured American citizen will reveal, above all things, a perfect adaptation of means to ends. This point cannot be urged too emphatically.

Let me show you just here one way of many in which sound morals hinge on home life. A child's tastes are matured and character formed by early surroundings. If, when he begins to take cognizance of things, he finds in domestic architecture and social life mere show taking everywhere the precedence, it will have an inevitable and unalterable effect for the bad upon his character. That he will grow up to help perpetuate the frauds and mockeries which are to-day the curse of American society, is just as sure as that the child is father to the man.

The house should be the outgrowth of the present and *probable*—*not* possible—future needs of the family. There should be individuality of plans. Unless two families are just exactly alike in every respect, it is sheer folly to build two houses on precisely the same plan. A dwelling will have beauty in proportion as it has *character*, and *character* it should take from its inmates. In this matter, fashion is almost as tyrannous as in dress. Conventional, stereotyped forms, colors and designs do their utmost to suppress the beauties of individuality. The house should express the man as far as possible. Here it is that the country and country town possess inestimable advantages over large cities. You may wander a long time in a metropolis and find no *homes* — nothing but houses, houses, houses. Now houses are no more necessarily homes, than clothes are dress. It is the perfect adaptation to the usual, personal wants of each individual family that gives variety, character and worth to domestic architecture.

All parts of the house are to be used. There should be no parlors which are only opened when there is a funeral or a wedding; nor should the best of everything be reserved for guests. It is very natural and right, of course, to wish to make a guest as comfortable as possible; but to put a spring bed and hair mattress in the guest chamber and lock it up for the chance-comer, while the owner and family sleep on bed-cords and straw-ticks, is absurd. The guest may well be content with *anything*. He comes to see *you*, not to enjoy the fat of the land; and if he cannot for a single day endure that which is part and parcel of your every-day life, how can you abide it for the three hundred and sixty-five and one-fourth days of each year?

Air and sun-light are worth more than all else. Don't be afraid to make openings lest there be no blank walls against which to place furniture. Get as much of out-of-doors as possible into the house, and let such minor things as pictures and sofas go. Broad windows and wide doors are inviting and hospitable — signs of welcome and good cheer within. An Englishman once said that the most unpleasant feature of American architecture was the stingy front door! Avoid narrow halls! If they can't be broad, well-lighted, well-ventilated, let the outer door open directly into a room. The stranger receives first impressions of a house and of its inmates on crossing your threshold. Let his eye rest on all that is inviting. Remember that your house is not to be *looked at*, but to be *lived in*. Remember also that it is not to be looked *into*, but *out from*. Therefore, put doors and windows where they best fulfill their purpose, no matter whether the exterior just "balances" or not. Don't lose a fine view, or the morning sun, because "a window there will make the house one-sided;" and don't put a window where it is not needed because of some fancied principle of equilibrium.

Use your house freely, yet, of course, without abuse. Let it be understood that parlor, library, nursery and kitchen, if you have all these — and if not, all that you have — are for use, but for different use. Teach the children to discriminate. If they do not have access to the parlor at home, they will not be at home in the parlor abroad. If they see no conveniences or comforts in their youth, they will not know how to use these when they are men and women. Shut your boy into the kitchen, and he will leave you at the first opportunity. Let him range from easy chair to sofa, from table to book-case, from porch to the barn, and he will find "no place like home" —till your neighbor's daughter is sixteen! You can't help *that*, anyway! *Your* responsibility is over.

Two things should stand first in your plan and expenditure—the kitchen and the kitchen drain. As a class, our American women oversee all the work of their households. Make this as easy for them as possible. It is hard enough, in all conscience! On the farm and in the workshop you have all the modern improvements and conveniences, all the labor-saving machinery. Let your wives have their share of these things in the kitchen. Let them grow as you grow. Pure, clean souls depend very largely on pure, clean bodies and homes; and these cannot be had without pure, clean water, readily obtainable. Dig cisterns as universally as you dig wells. Sanitary laws are not fictions. Let them be strictly observed.

All ornamentation of your house should be a part of the building, and should grow out of it and its necessities. At first glance, it should give a philosophical and sufficient reason for its existence. You can each test this. Avoid all that is *merely* ornamental; let everything of this nature have some utility as its basis, and you will be surprised at the increased gratification, and at the diminished expense. A home should show itself a home in size, in material, in shape, and especially in style of ornamentation; cornices, columns, materials and surroundings that would beautify a temple, make a cottage ridiculous. The same law controls internally as well as externally. Simplicity is a factor in tasteful domestic architecture that Americans are too apt to overlook.

With "all the world" from which to choose, it is not difficult to select a building spot which will be high and dry, and which can be beautified at very little expense. The plan of your house must of course adapt itself more or less to its site, and take character from the surrounding landscape. Keep an acre or two for the house—for the children. In working on this, remember that in landscape gardening the artist should be as much hidden as possible. There should be no tricks, and nothing meretricious. Nature is honest; help her to do her work, and simply say: "See what nature has done." All she needs is generous, stimulating treatment, and protection against the many accidents which so dwarf her efforts and thwart her plans, and she will reward you fourfold. Specifically, under this general rule, avoid the pruning knife as far as the clipping into fantastic shapes is concerned. Let each tree or shrub grow as nature intended it should. This is a work of presentation, not of representation. Then, too, in grouping, follow natural methods, not artificial. Trees in groups "here and there," and such trees as are usually found together, are far more pleasing than a rigid adherence to the quincunx or any other order. Flowers should be brought together for their harmony of color rather than the contrast. A bed which disposes about a given center colors which blend and shade away into that which gives unity of impression, is far more attractive than one in which we have a dozen distinct and contrasting colors. The latter is distracting—the former quieting, refreshing.

The more luxuriant growth, all trees and tall shrubs, should be somewhat removed from the house. Sunlight and air are the great requisites there. Open spaces are desirable. But you may continue the green of the lawn in the green of the ivy or flowering vine trained upon the building: not all over it, causing dampness and rot, but just far enough up the sides to hide the rough masonry of the foundation, and prevent the harsh contrast between it and the turf. Any flowering vine is better than the ivy, because its leaves at least fall away, and during four months of each year permit sunlight and air to cleanse and purify the walls of the dwelling.

About the house, too, should be the trellises and arbors. These are in the nature of architecture, and should rarely be put in competition with nature—as is so often done, even in very small inclosures. Right here occurs to me the fact that very few seem to know how beautiful and satisfactory a porch or piazza can be made with a most inexpensive trellis and vine. Most farmers will tell you that they cannot yet afford a porch—"it will cost me $150 at least." It need cost but $2.75! Two days' labor with a hired man will do all that man need do. Go to the nearest timber; cut a few poles and "stakes;" set one of the latter with a good crotch or fork at each outer corner of your piazza; and with the others, the poles, and a little ingenuity, construct the merest skeleton. Nature will do the rest, if you will give her a grape root to work with—or that of any "climber."

These vines, by the way, have another use. A wise landscape gardener—and any quick-witted farmer may be this—will use vines and trellises to hide unsightly objects. All out-buildings should be carefully screened from the dwelling. A woman who looks from her kitchen window all through the long weary summer day into an unkempt barn-yard will not be as good a Christian at dark as she whose eyes have fallen restfully on a bank of green. Cover an unsightly line-fence with sweet pea vines and morning glories, if nothing else. Do you not find that the ruins of a forest are clad in mosses and half hidden with vines? Ask nature to help you cover your property shortcomings in a similar way.

The views without the inclosure should largely control the arrangement of the garden. You may shut out a dusty road with trees and shrubs, but not a noble landscape. If nature has been kind enough to give you more than your own, don't refuse the gift and shut yourself in on your handkerchief lawn. At every point keep the view from doors and windows unobstructed if you can secure pictures of beauty beyond. Avoid high and close hedges and fences. Kansas is not so richly provided with fine scenery as to allow you to willfully shut out any of it. Build your fences, plant your hedges, and arrange your shade trees so as to let in all the beauty and keep out all the ugliness possible.

Now about walks. Do not make them of gravel; it affords an insecure footing, it is noisy, and people who do not wear brogans suffer intensely before they reach your door. It is the old story of the pilgrim and the peas. Use any other substance that is dry and finer and smooth. One of the cheapest and best walks I have ever made was with coal siftings. Walks should be few, else they seem to be perpetually warning one to keep off the grass, to go here, and not go there. The sod itself is that which nature places under the foot of man, and we must not be restricted from this too much or too sharply. Walks mean "business," and should never wander from their object for the sake of wandering. If you have a fine view, or some unusual plants, or a beautiful vase (and don't have any vase if it cannot be a beautiful one), you may point me to either or all by a path or paths, but leave me also the privilege of going directly to the house, if business calls me there, or if I do not wish to turn aside. Not that all walks should be in straight lines, but every walk should have an objective point, and reach it as easily, directly, and pleasantly as possible.

Nothing is more to be deprecated than some of the tricks of so-called ornamentation which are so prevalent to-day, especially in the small yards of city residences. A large stone rolled against the corner of the front steps, or left near the gate, or in one corner of the yard, covered with moss and vines, may be attractive. But a stone planted in the middle of a lawn, and encircled with other stones regularly laid, and trimmed with old oyster shells, surmounted with a conch shell, and covered with a vine, half of which generally is dead, is a monstrosity. I pity the people who live in the house, and are therefore obliged to look at it so often. Natural inequalities in the surface, like a natural "rise" in a man's nose, are frequently attractive; but the artificial mound now so common is nothing more or less than a wart on the nose. Keep the artist hidden; let it seem as though nature had done nearly all the work.

. . . .

I have thus hastily sketched for you the line of instruction here, much of it, I suppose — and naturally — in the words of the author whose work is our text-book. It is for you to determine whether such instruction is wise, appropriate and valuable. A word now, and I close. I do not grudge to those who are thronging from other shores one acre of our territory. But I look with no slight alarm on the fact that the American people are becoming *homeless*. We are already the floating population, having sold our birthright for a mess of pottage. Largely for want of proper regard of the very points to which I have referred, unimportant though they may seem, have our boys — or we boys — drifted from that sure anchor ground, the farm, to the quicksands of the city. If there is nothing graceful, or beautiful, or attractive about the farm-house and grounds, all must go wrong! The mother's spirit is dwarfed and overshadowed, and life is a mere burden. The child cannot step out of the door without going ankle-deep in mud, and stepping in again provokes harsh words and the quick reproof. If your son finds that neatness, cleanliness, comfort and taste seem to flourish only in the city, to the city he will go. So will the daughter. Now I have no quarrel with the town. Man made it, and it is very good. *But God made the country, and it is infinitely better.* The FARMS of America must give us intellectual, social, political and moral strength and stamina, or we shall degenerate faster than any other nation known in history. Health and strength, cool judgment, a well-balanced mind, shrewd common sense, courage and firmness of nerve, energy, *grip*, and integrity of purpose—all these have their roots *in the soil.*"

ELK COUNTY HORTICULTURAL SOCIETY.

(Organized February 6, 1880.)

REPORTED BY THE SECRETARY.

The following are the officers of this Society, elected for the year 1880:

President—Henry Welty, Elk Falls.

Vice President—J. W. Mitchell.

Secretary—Dan. Newby, Howard.

Treasurer—P. M. Akers.

The first meeting was held February 6, 1880, at Howard. Henry Welty, Esq., of Elk Falls township, was called to the chair, and Dan. Newby, of Howard, was chosen secretary.

Articles of incorporation were offered by the chairman, were adopted, and signed by the following-named persons, to wit: Henry Welty, Melville H. Porter, J. A. Somerby, D. C. Harkness, J. D. Hurst, A. Crismas, M. G. Wright, P. M. Akers, S. R. Buchanan, John F. Stoner, H. B. Barnes, J. B. Dobyns, I. W. Mitchel, and D. Newby.

A permanent organization was effected by selecting Henry Welty as President; I. W. Mitchel, Vice President; D. Newby, Secretary; P. M. Akers, Treasurer. Trustees—M. H. Porter, J. A. Somerby, and D. C. Harkness.

A committee of three—viz., D. C. Harkness, J. A. Somerby and J. D. Hurst—was appointed by the President to report a constitution. Said committee presented a report, which, after some modification, was adopted by a vote of the Society, as follows, viz.:

CONSTITUTION.

ARTICLE 1. This Association shall be known as "The Elk County Horticultural Society."

ART. 2. Its object shall be the advancement of the science and art of horticulture.

ART. 3. Its membership shall consist of annual members, paying an annual fee of fifty cents; ladies to become members by simply giving their names to the Secretary of the Society.

ART. 4. Its officers shall consist of a president, vice president, secretary, and treasurer, and three trustees, who shall be elected by ballot at each annual meeting of the Society hereafter, and shall hold their term of office for one year, or until their successors shall be elected and installed.

ART. 5. It shall hold regular meetings on the first Saturday of each month; the meeting on the first Saturday of January to be known as the annual meeting.

ART. 6. This constitution may be amended at any regular meeting of the Society by a two-thirds vote of the members present, provided notice has been given at the monthly meeting previous.

On motion, the Society adjourned until the next regular meeting (first Saturday in March) at 10 o'clock A. M.

FRANKLIN COUNTY HORTICULTURAL SOCIETY.

(Organized February 3, 1877.)

REPORTED BY THE SECRETARY.

The officers for 1880 are:

President—Isaiah Pyle, Ottawa.
Secretary—H. P. Welsh, Ottawa.
Treasurer—W. J. Newton, Ottawa.

Meetings are held monthly.

JACKSON COUNTY HORTICULTURAL SOCIETY.

REPORTED BY THE SECRETARY.

The following is a list of the officers for the year ending May, 1880:

President—J. W. Williams, Cope.
Vice President—Jacob Hixon, Holton.
Secretary and Treasurer—V. V. Adamson, Holton.

Meetings are held monthly during the summer, at the court house, in Holton. The annual meeting is held in the month of May, for the election of officers.

ANNUAL MEETING FOR 1879.

Met at the court house in Holton, May 3d, pursuant to call. The President being absent, the Society called Judge Price to the chair, when Dr. V. V. Adamson was appointed Secretary *pro tem.*

On motion of M. M. Beck, the Society proceeded to elect officers for the ensuing year, with the following result:

Hon. J. W. Williams, of Cope, President; Jacob Hixon, of Holton, Vice President; V. V. Adamson, of Holton, Secretary and Treasurer.

M. M. BECK reported his Ben Davis apples as blooming freely, but dropping the fruit badly.

DAVID BLOSSER reported that the Winesap bloomed fully, but the apples are falling. Rawles Genet bloomed healthy, and are quite full of fruit. Rambo will not fruit this year. English Morello cherries will produce about half a crop. Budded peach trees, all fruit buds killed, and seedling trees will produce about one-sixth of a crop.

JACOB HIXON reports his Rawles Genet and Ben Davis trees as promising a large yield. The Fameuse promises well; Talman Sweet very full; Rome Beauty is blooming well; Dominie fails this year; Limber Twig promises a full crop; prospects are good for about half a crop of Black Morello cherries; budded peaches will fail to fruit this year; seedlings will produce one-fifth of a crop; at present is unable to speak in regard to crop of small fruits.

V. V. ADAMSON reported peaches, pears and early apples as a failure this season.

On motion, the Society adjourned to meet at the court house, in Holton, on Saturday, June 7th, at 2 o'clock P. M.

Owing to bad weather, there was no attendance at the June meeting.

The Society met July 12th, 1879, in pursuance to call; President J. W. Williams in the chair.

Owing to the bad condition of the roads, and the meeting being in the midst of a wet harvest, but few members were in attendance.

The President presented to the Society for inspection, the following apples from his orchard: Early Harvest, which was passing out of its season; Red Astrachan, an apple of Russian descent. This was a fine specimen of the sub-acid class, and was in the height of its season. Large Yellow Bough, a good variety of sweet apple; was just entering upon its season.

The Society adjourned to meet at the court house, in Holton, on Saturday, July 26th.

Met July 26th; President Williams in the chair.

Apples presented for inspection by Mr. Williams: American Summer Pearmain, Red Astrachan, Red Streak, and a nameless apple, sub-acid, prolific bearer, of fine flavor, and a good cooker.

J. Hixon presented the Golden Sweet, Red Streak, Strawberry, Summer Pearmain, Duchess of Oldenburg, and Keswick Codlin.

Mr. D. U. Townsend, by invitation, read the following

ESSAY.

MR. PRESIDENT, AND GENTLEMEN: As I have been designated to prepare an essay on fruit culture, I will endeavor to present my views on the subject as I have been able to form them from experience and observation; but feel my incompetency, as I have not made fruit raising a matter of study till recently, and have not made essay writing a specialty.

It would be useless for me to dwell on the merits of Kansas as a fruit-producing State, as her products have demonstrated that fact to the satisfaction of all. The success of fruit trees carefully planted shows what may be accomplished by right methods of culture.

As I understand it, the object of this association is, to find out, as near as possible, the best modes to be adopted in the raising of fruits, and of making it one of the profitable industries of our country. The great trouble with our orchard planter has been the want of that care and studious attention that must be bestowed, if success is expected. In traveling over the county for the past two or three years, as dealer in fruit trees, I will venture the opinion that not more than one-tenth of the fruit trees planted by our people are living to-day—the result of sheer carelessness on the part of the planter.

It is supposed by many that if a man purchases a lot of fruit trees, and thrusts them into the earth, his work is done; and, as a matter of course, he may come around shortly and look for fruit. Of course he will be disappointed, for although the greater expense is footed after the trees are bought and planted, the work of rearing an orchard has only commenced.

The first thing demanding attention is the location of the orchard. It should be situated as conveniently as possible to the residence, but the lay of the land is of first importance. Too little regard has been paid to this, the whim of the owner overbalancing the requirements of a successful orchard. I would always prefer a northeast slope, or a northwest, rather than a south or southwest. I have observed that crops of all kinds grown on land lying to the north, northeast, or even northwest, yielded more per acre than on land with a southward slope. The only reason that I can assign is, that the south winds which prevail, together with the more direct rays of the sun, absorb the moisture faster on southern than on northern slopes.

Another reason in favor of the north or northeast slope is, that it will prevent the trees from sun-scalding, because they are protected from the hot south winds; besides, the tree will stand in a more upright position, and make a much more rapid growth.

The next thing in order is the preparation of the ground for the reception of trees. I would recommend to those contemplating setting out an orchard in the spring, that the ground be thoroughly plowed in the fall. It would not be amiss to first give it a good coat of well-decomposed manure, instead of following the foolish and injurious practice of piling a great heap around the roots of the tree after planting. After scattering the manure evenly over the contemplated orchard plat, it should be broken at least ten inches deep, and if this cannot be reached with one furrow, follow in the same place, in order to break up the hard-pan or subsoil, that the moisture may penetrate, and be held in readiness for the use of the tree, as it is known that a growing tree requires more moisture than any other vegetation. Besides this, deep plowing does away with the labor of sinking deep holes in the hard earth in which to cramp, smother, and during wet weather to drown the roots, as the hole will form a basin for the water. The tree is also likely to become unsteady in its position before the roots have had time to penetrate the hard walls around it. As to the best time for planting, that is a matter which I think has not been fully tested. There is considerable prejudice against fall planting, but I believe without just reasons. I do think that a tree carefully handled, and planted at the proper time in the fall, is very apt to live through the winter, and undoubtedly has from three to six weeks the start of those planted in the spring, and is not so apt to perish during the hot, dry weather of July and August. How often do you see trees set out late in the spring put forth small, sickly leaves, wilt and die during hot, dry weather. This is because the roots have not had time to take sufficient hold of the earth to support it.

My mode of planting fruit trees would be to stake off the ground in rows each way so that the trees would stand thirty feet apart, and in no case would I have them closer. In most of the large orchards, the trees of which are twelve to fourteen years old and planted less than thirty feet apart, now have their branches overlapping each other, thus shutting out the sunlight and air, throwing the fruit too much in shade and dampness, causing mildew and scab. In addition to this, we must look at the position of the roots where trees are crowded close together. The roots are the organs through which the tree obtains its food. Now it is known to all farmers that if you plant corn too closely or thickly, the result is that the soil cannot sustain the great drain made upon it by the many plant roots, and no corn is produced. Would not the same result follow in tree culture? The roots of trees run to great distances through the ground in every direction to about the same length as the branches, and if the latter overlap, neither will the roots have sufficient room, and the tree will not be properly supported.

After the plot is staked off, with a plow run furrows each way thirty feet apart, the same as marking off corn ground by the old style, and at the place where one furrow crosses the other, make a hole large enough to admit all the roots; be careful to clip off the bruised ends, and to place them in a natural position. It would be a good idea to let the tree incline fifteen or twenty inches toward the southwest, as it is likely to lean to the opposite direction in growing, from the effects of the south wind; also, place the side of the tree which has the most branches to the south. Throw in rich soil around the roots, pack moderately, and the work is done. After the orchard is set out, plant to corn, taking care in cultivating it not to get closer with the plow to the tree than six feet each way. It is a mistake to plow up close, for by so doing you destroy the surface roots, which have been placed there by Nature for wise purposes, and are highly necessary to the welfare of the tree. If you wish to keep the ground loose and weeds down, do it with the hoe, because with this instrument you will not injure the roots. After the orchard commences to bear, and no longer needs the protection given by the corn from heat and wind, sow it to clover, which is the only grass or plant which is fit for the purpose. But to this part of the subject belongs the selection of trees. Plant nothing but a good, sound, thrifty one, with low, symmetrical head, and plenty of roots. It is poor policy to put out a poor tree, although it could be had for nothing. In age, I would prefer a three-year-old to any other. When early bearing is the object, a larger and older tree is better.

As to selecting varieties of different fruits, it is not my object to dwell upon this, as the best lists are pretty well understood.

Proper pruning also should command the attention and study of the horticulturist. A great deal has been said on this point, and there is still quite a difference in opinions. My idea is to cut the top back at planting, forming a round, shapely head, leaving the stock in no case more than three feet long, as low trees are less apt to sun-scald, and are protected from the wind. The cutting should be in proportion to the injury done to the roots. I would cut a peach tree back a great deal more than an apple tree. After the tree is planted it will form its own head, and in most cases will be well formed and comely to look upon. All that is necessary after this is to trim off straggling branches, leaving a bud just below the cut on the outside, and rubbing off the shoots on the center of the head with the hand. A fork should never be allowed to form; better spoil the shape of the tree than to permit them. I think this is all the pruning that is necessary, for nature will not prompt the sending out of more branches and leaves than is necessary to the health of the tree.

Observations of practical results have proven to me that all the fruits of northern temperate climates can be successfully raised in Kansas, for I have seen nearly everything in almost perfection, from the tender currant to the hardy apple.

But before perfect success can be looked for in every variety of fruit, the best methods of culture for each one must be well understood and practiced, As, for instance, the small fruits, such as the currant and raspberry, must have shade, and will never produce if exposed to the hot rays of the sun. I suppose the blossoms are destroyed by it. The pear also needs shade, and in fact, all fruit trees and plants require more or less protection from excessive heat and violent wind storms, whether hot or cold; therefore, I think wind-breaks around the orchard necessary.

Again, the same kind of soil will not be equally adapted to the growth and production of all the fruits, some requiring a light and others a heavy or clay soil. This should be looked into, and the correct ideas sought. Indeed, to be a thorough horticulturist, a great deal of study, observation, labor and experience are needful. A person should be something of a botanist, chemist and entomologist: a botanist, that he may understand the organization of the plants, the offices performed by leaf, root, bark and cellular tissue; a chemist, that he may know the elements which the soil should possess, and also the influences of moisture, atmosphere and sunlight which would best promote the growth and fruitfulness of tree and plant; an entomologist, that he may be acquainted with the species and habits of injurious insects, and the best plans to be followed for their destruction. Yet fruit may be raised without these accomplishments, by carefulness.

Fruit raising can be made one of the most pleasant and profitable employments in which man can engage: pleasant, because it does not require heavy drudgery, but light and agreeable employment, and then the pleasure afforded in watching the promising blossoms in the spring and the rich, clustered fruitfulness of autumn; profitable, because fruit will be esteemed and consumed through all time, and the supply will never exceed the demand.

The discussion on Mr. Townsend's paper was opened by **MR. CLARK**, who agreed with Mr. T. on location.

F. WEST does not like a northwest exposure. A portion of his orchard is in a valley, through which a stream of water flows. Those trees that are near the brook grow best, and the fruit is the finest.

MR. HIXON would select a northwest exposure, and would protect an orchard on the south. He would not care whether there was a north protection or not; thinks it is the south winds at the time of fruit setting on trees that blast the apple crop.

MR. WATKINS agrees on location with Mr. T., but thinks more is due to culture than to location. He would leave the north fully exposed, but protect on the south.

MR. BLOSSER stated that his orchard presents to the east, and does well. He thinks it is the northwest winds that injure his orchard.

MR. HIXON thinks the morning sun damages the young fruits.

MR. TURNER has wind-break protection of walnut trees, twenty feet in height, on three sides of his orchard, and finds that while those fruit trees near the wind break bear well, those in the center sometimes fail.

MR. WILLIAMS favors a northern exposure every time.

MR. BLOSSER said that cramping roots prevents development of the tree.

It was estimated that about nine-tenths of all the trees that have been set out in Jackson county died, through carelessness in planting, while many were virtually dead when received from foreign nurseries. The Society would advise patronizing home nurseries. Mice cause more destruction than rabbits.

On motion, the further discussion of Mr. Townsend's essay was postponed until the next meeting.

The Society appointed W. D. Barnett to report, on or before the January meeting, upon insects in Jackson county injurious and beneficial to fruit culture; D. U. Townsend, to report upon the quantity, quality and variety of fruit trees planted in Jackson county during the ensuing year, at the January meeting; Jacob Hixon, to report upon the best method of preserving winter fruits, at November meeting; J. W. Williams, to report upon forestry and ornamental trees, at the January meeting.

Adjourned, to meet on Saturday, August 16th.

Met at the court house in Holton, August 16th, at 2 o'clock P. M., W. T. Scott in the chair.

V. V. ADAMSON presented to the Society for Capt. Little, of the "parallel," a very nice display of apples. The following varieties were recognized: Fallawater, Summer Queen, Summer Bellflower, Red Streak, Large Yellow Bough, Autumn Strawberry, Maiden's Blush; while there were four varieties that the Society was not able to name.

W. H. CHAPMAN, of Circleville, placed upon the table the following apples: Golden Sweet, Vandervere Pippin, English Russet, Limber Twig, Maiden's Blush, Dominie, Rawles Genet, Fameuse, and Sweet Russet. He stated that his orchard was doing poorly, and had for the last two years in a measure failed. He attributed the failure to the trees being too close together; thinks he will have to cut out at least one-half of the trees if he would secure a crop.

ELLWOOD THOMAS exhibited a very fine specimen of the Twenty-ounce apple, also some two or three other varieties without names.

After examining and discussing the different varieties of apples presented, Mr. BARNETT was requested to furnish a list of apples that would be most profitable for a small orchardist. He gave for winter fruits: Rawles Genet, Ben Davis, Willow Twig, Smith's Cider, Red Winter Pearmain, White Winter Pearmain, Jonathan, Dominie. Fall varieties: Maiden's Blush, Fameues. Summer varieties: Summer Queen, Carolina Red June. Mr. Barnett stated that wise orchardists would patronize home nurseries, and when setting trees would prune the roots, cut back the head to correspond with the root of the tree, and set but little deeper than the tree grew in the nursery. Trees should be at least thirty feet apart in the orchard. One of his reasons for shallow planting was, that if you go down to the hard-pan and set your tree upon it the tree would drown out, the hard-pan holding water like an earthen vessel.

MR. BRADSHAW set his trees with a weeding-hoe instead of a spade, and thereby avoided setting too deep. He mulches them well with old hay, and when cold weather sets in, takes away the mulching, that the earth may become thoroughly frozen, and then reapplies the mulching. By this method, he prevents the early starting of fruit buds, and is surer of a crop of apples. He condemns the watering of trees when they are set out; believes that orchards in Kansas are generally injured by the trees being set too close; had raised one orchard in southwestern Missouri and one in Kansas. In Missouri, the trees were of slow growth, somewhat dwarfed, but they fruited early and yielded bountifully; whereas in Kansas there was an enormous wood-growth, the trees were late to come into bearing, and, as compared with the Missouri orchard, shy bearers.

JACOB HIXON: Does grafting tend to shorten the life of the tree?

W. D. BARNETT: Root grafting does tend in that direction. If we would bud on seedling stock, we would have hardier trees.

MR. BRADSHAW thinks the natural life of an apple tree is of shorter duration in the West than East. He spoke of an orchard in Kentucky that had been bearing bountifully for the last sixty or seventy years; was told that the trees had all been grafted on the root of the wild crab, and asked for information on that point.

Messrs. Hixon and Barnett had both experimented by grafting on the stock of the wild crab. The grafts would grow nicely for one season, and then die. They considered the experiment a failure. Mr. Hixon gave it as his opinion that the practice of scraping off the rough bark and washing the bodies of the trees with soft soap, or any other strong alkaline wash, was beneficial, and prolonged the life of the tree by destroying the insects that prey upon it.

Mr. Bradshaw stated that in Kentucky it was the custom to hang tobacco stalks in all of the trees; that the rains and dews extracted the strength of the tobacco, which, flowing down the trunk of the tree, kept off all injurious insects. He also thought that an apple tree grown upon timber soil was longer lived than the same variety grown upon the prairie.

Mr. Bair, late of Pennsylvania, said he had had but little experience in fruit culture; had never put out an orchard for himself, but when a boy, helped his father put out one. This was in 1848, and they planted trees according to the old Pennsylvania idea. Two trees each day were all two men were able to put out. The holes for the trees were dug 6x8 feet, and two feet deep. They then went to the woods with wagons, gathered up decomposed leaves and muck, and mixed them with the top soil. With this mixture the holes were filled, and in this composite the trees were planted. The trees were not pruned after they became established, except to keep out the dead or broken limbs. The orchard was not cultivated, being sown to grass; but once in five years the trees were given a dressing of lime—300 bushels to the acre—and stable manure was applied freely at the same time. Hogs and sheep were pastured in the orchard. From the time the trees came into bearing, up to the present, there has not been a failure. There was an orchard on the same farm that was put out in 1776-'7, which fruited bountifully each year, the trees seeming to be perfectly healthy. They were all seedlings, and only those that bore a fine quality of fruit had been allowed to stand. They were of enormous size, many of them exceeding forty feet in height.

Mr. Chapman asked if it would do to prune old trees, where they were so thick as to interfere with their fruiting.

Mr. Hatch, a practical trimmer, said he would not hesitate to use the saw and ax freely. He had taken off limbs from two to eight inches in diameter, without injury to the tree, and by opening up the head of the tree, so that the sunlight and air might have free access, restored the tree to full bearing.

The members were generally in favor of pruning freely.

On motion, the Society indorsed the action of President Barnett, in tendering the hospitality of the city to the members of the State Horticultural Society, at their next annual meeting.

On motion, the President appointed Jacob Hixon, W. T. Scott and V. V. Adamson, Committee on Entertainment.

The President appointed Capt. J. A. Scott, G. F. King and T. P. Moore a committee to confer with railroad officials and secure a reduction of fares for those wishing to attend that meeting.

Adjourned, to meet September 13th.

JEFFERSON COUNTY HORTICULTURAL SOCIETY.

(Organized January 24, 1880.)

REPORTED BY EDWIN SNYDER, SECRETARY.

Officers for 1880:
President—J. N. Insley, Oskaloosa.
Vice President—J. E. Smith, Oskaloosa.
Secretary—Edwin Snyder, Oskaloosa.
Treasurer—James Maine, Oskaloosa.
Membership: Males, 29; females, 15.
Meetings are held monthly.

JOHNSON COUNTY HORTICULTURAL SOCIETY.

(Organized April 1, 1876.)

REPORTED BY THE SECRETARY.

Officers for 1880:
President—H. Perley, Spring Hill.
Vice President—Prof. A. Carroll, Olathe.
Secretary—B. S. McFarland, Olathe.
Treasurer—J. M. Hall, Olathe.
Executive Committee—William Maxwell, Edgerton; E. P. Deihl, Olathe; A. Bower, Olathe.
Entomologist—Dr. Woodard, Olathe.

Society met at Olathe, on September 12, 1879, for the purpose of reorganizing. The result of the meeting was the election of the officers given above.

Met October 11, 1879; President H. Perley in the chair.

Mr. Perley exhibited six varieties of apples, and Kansas-grown chestnuts, grown upon trees raised by him from seed. The President also showed two beetles that deposited the egg of the flat-headed borer, and one beetle that deposits the egg of the round-headed borer, specimens of the borer, and some other insects. He also showed roots of an apple tree affected by the root plant louse.

The following are the outlines of an unwritten address, delivered by Prof. Carroll, on "The Transformation of Insects:"

I. General characteristics and appropriateness of name.
II. General principles, according to which they are classified.
III. The four stages of their existence—*a*, egg; *b*, larva; *c*, pupa; *d*, imago.

a, The egg stage of existence: 1, multiplicity; 2, where laid; 3, how preserved; 4, time of incubation; 5, how destroyed.

b, The larva or worm state: 1, voracity of appetite; 2, on what it feeds; 3, rapidity of growth, and consequent great demand for food; 4, length of life in this state, and end of this stage of the creature's career; 5, different names, as maggot, grub, caterpillar.

c, The pupa or baby state: 1, its silk-lined cradle without rockers, and the voiceless, lullaby song of the motherless insect; 2, time in this stage various; 3, its cast-off swaddling, and preparation for the resurrection morn of its glorious and perfect state; 4, the voice that wakes the apparently dead sleeper and bids it enter upon its final career of winging its joyful flight as

d, An imago in the perfect state: 1, life; 2, lays its eggs; 3, dies. Each stage of its career illustrated; particular attention paid to its transformatory stages.

After quite lengthy discussions of the borer, codling moth and plant louse, the following questions were proposed for the State Horticultural Society, viz.: "What is the best method of entrapping the codling moth?" "What is the best treatment of the root plant louse?"

On account of bad weather, no meeting was held in November.

At the meeting on December 13th, the subject of borers was continued from last meeting.

Col. Hayes stated he had two orchards; one had but little attention and was not troubled with borers, the other almost spoiled, though favored with much attention, and asked the cause.

Mr. Marion thought it was in the soil; that the soil needs iron, and recommends mulching with iron cinders.

Mr. Stevenson thinks black loam better than red soil for trees.

Mr. Dwyer suggested turning hogs into the orchard as a partial preventive.

Col. Hayes had heavily limed four rows of trees, sowed to grass, washed with concentrated lye, had hogs among them, and still there was no improvement.

Mr. Bowen finds an application of boiling-hot soap about June 20th an excellent remedy against the borer.

The general opinion was that the knife was the surest remedy.

The Society meets on the second Saturday of each month.

LABETTE COUNTY HORTICULTURAL SOCIETY.

(Organized January 17, 1876.)

REPORTED BY THE SECRETARY.

Officers for 1880:

President—J. L. Williams, Oswego.

Senior Vice President—J. B. Draper, Oswego.

Junior Vice President—N. Sanford, Oswego.

Secretary—H. S. Coley, Oswego.

Trustees—J. P. Updegraff, O. Whitney, G. C. Braught, all of Oswego.

The failure of the fruit crop (excepting small fruit) caused a lack of interest in the year's meetings. However, the Society is in a flourishing condition, and the present showing for a fine crop of fruit in 1880 creates great enthusiasm.

LYON COUNTY HORTICULTURAL SOCIETY.

REPORTED BY THE SECRETARY.

Officers for 1880:

President—Robt. Milliken, Emporia.

Vice President—C. D. Burdick, Emporia.

Secretary—C. J. Hartman, Emporia.

Treasurer—J. M. Miller, Emporia.

The Society is thriving, and doing good work. Meetings are held semimonthly.

MANHATTAN HORTICULTURAL SOCIETY.

(Organized January 24, 1874.)

REPORTED BY THE SECRETARY.

Officers for 1880:

President—T. C. Wells, Manhattan.

First Vice President—Prof. E. A. Popenoe, Manhattan.

Second Vice President—Rollin Moses, Manhattan.

Secretary—Ambrose Todd, Manhattan.

Treasurer—S. D. Moses, Manhattan.

The first meeting of the year was held in the horticultural rooms of the Agricultural College, on January 9, 1879.

Subject discussed, *The Winter Care of Orchards and Gardens.*

A. TODD: I protect fruit trees from rabbits by wrapping the bodies with straw, hay or corn-stalks; sometimes wash them in early autumn with a compound made of soft soap, ashes and lime, mixed with water to a consistency of paste. This is effectual as long as it lasts. Should be repeated several times.

PROF. VAN DEMAN indorsed the wrapping method.

T. C. WELLS recommended pruning in spring as preferable. All wounds should be covered with dissolved gum shellac or wax. Tender varieties of grape vines should be laid on the ground, and covered. Old blackberry and raspberry canes should be removed before spring. Strawberries should be mulched during winter. Asparagus and rhubarb should be covered with manure in the fall.

At the meeting held in February, the subject adopted for discussion was, *Insects Injurious to Fruits, and Methods for Protection from their Attacks.*

PROF. VAN DEMAN: The flat-headed apple-tree borer has been very destructive to apple trees. Recommended stimulating the growth, as this insect seldom attacks vigorous trees. Scrape off all rough bark in May, and wash with strong lye. The codling moth is getting numerous, and a fight must be made.

A. TODD: All barrels in which apples have been packed should be burned before spring, to prevent the moth from hatching.

T. C. WELLS: All wormy fruit should be picked up from under the trees, and destroyed.

Subject continued to next meeting.

At the March meeting, the subject of insects, set for this date, was postponed.

The means resorted to by traveling nursery agents received a severe handling, and all persons were advised to give them a severe letting-alone. The varieties which constituted their stock in trade were generally high-priced and risky. It was far better to purchase of reliable home nurseries.

PROF. VAN DEMAN recommended Southern Queen sweet potato for its productiveness and quality.

R. MOSES asked if forest trees planted near an orchard, especially the black walnut, would be injurious.

Answer: If planted forty feet distant, would not be injurious.

Society met May 8th, at the residence of the President. Subject, *The Bird Law*, was discussed by several members, who advocated a modification of the law, so as to allow owners of premises to destroy upon their lands such species as were found injurious to crops.

The cause of the almost failure of the fruit crop the present year was attributed to late spring frosts. The extreme cold of the past winter injured peach trees, and blackberry and raspberry vines seriously, especially on low lands.

Shelter belts around orchards were strongly recommended.

After the meeting adjourned, the members examined the grounds of Mr. Wells, and found everything in excellent condition.

Society met, August 21, 1879, at the residence of the Secretary.

Wm. Cutter, of Junction City, being present, was voted an honorary membership, and invited to address the Society on the subject selected for discussion.

MR. CUTTER: The losses occasioned by that disastrous year, 1874, had discouraged many grape growers. The only varieties uniformly successful with me are Concord and Dracut Amber. As to mulching fruit trees and vines to retard early starting in spring, I have no faith in accomplishing result.

PROF. GALE concurred with Mr. Cutter's opinion.

PROF. LEE: I spaded the ground between my grape vines, deeply, and as I thought properly trimmed the vines. These vines did not mature a crop of fruit, while other vines around me bore abundantly; can any one tell the reason for my failure?

Answer: Probably too many of the roots were cut by the spading. Judicious trimming, summer pinching-off of growth, and good cultivation, were better than mulching.

WM. CUTTER: Mulching during winter to keep the ground moist, is beneficial, as more plants perish from drouth in winter than is generally supposed.

Mr. Wells exhibited fine samples of grapes—Ives, Diana, Delaware, Clinton, Perkins, Cottage, and Dracut Amber. Mr. Todd—Concord, Isabella, Rogers No. 15, Catawba, and Delaware.

Society met, September 25, 1879, at the residence of the Secretary.

Subject for discussion: "The best time to gather summer, autumn and winter varieties of apples and pears; also varieties of peaches, cherries and grapes."

It was recommended that apples, pears and peaches be picked as soon as they begin to color, for market purposes—other classes when riper.

Grafting grape-vines should be done in mild weather in winter. Remove the dirt from around the vine to be grafted; make a cut into the vine downward, at a point below the surface of the ground; make a wedge-shaped cion, insert it into the stock, wind the parts strongly together, and throw up a mound of earth around the graft.

Prof. E. A. Popenoe was elected a delegate to the thirteenth annual meeting of the State Horticultural Society, called at Holton, December 16, 17, and 18, 1879. He was instructed to ask the influence of that Society to secure a modification of the present bird law, so as to give to the owners of premises the privilege of destroying any species of birds found on his farm injuring his crops.

ANNUAL MEETING.

The annual meeting of this Society was held December 13, 1879. The election of officers for 1880 resulted in the list given at the head of this report. Discussion on the condition of trees during winter, with reference to the position heretofore accepted, that the sap descended to the roots, led to the conclusion that such doctrine was erroneous.

In support of this position, PROF. POPENOE cited a case where a maple tree was cut off at the ground, the end coated with wax, and at the proper time was tapped, from which the flow of sap was equal to trees in their natural condition.

MR. PALMER called attention to the fact that a section of a tree when frozen was heavier than when in a growing state. These cases led to the belief that there was more sap in trees in winter than in summer.

T. C. WELLS offered the following list of hardy plants and shrubs, which he considered worthy of culture; most of them being indigenous to Kansas:

PERENNIAL SHRUBS.

DWARF FLOWERING ALMOND.—Covered, in early spring, with double pink flowers. If carefully pruned to a compact growth, it makes a very desirable shrub.

BARBERRY.—Foliage of different colors in different varieties; fruit edible.

COMMON ALDER.—When well-trained, becomes a very ornamental shrub. Flowers visited by bees.

WAHOO (*Euonymus*).—A valuable native shrub; fruit, bright crimson and scarlet; very conspicuous during winter.

RED TARTARIAN HONEYSUCKLE.—Upright; flowers pink, in May.

COMMON BUCKEYE.—Worth cultivation; flowers and leaves come very early; easily grown from seed, but difficult to transplant. (The horse chestnut was mentioned as proving a failure.)

BLUEMONT PLUM.—Believed to be a hybrid; highly ornamental, when young and well cared for; branches pendent; foliage clean and bright; flowers white; fruit bright red; native of the vicinity of Manhattan.

COMMON LILAC.—White and purple.

PERSIAN LILAC.—More hardy than the common lilac; flowers later in spring, and buds consequently less liable to be killed by late frosts.

WILD THORN (*Cratœgus*).—A rare native; of value as an ornamental shrub.

PAWPAW.—Very desirable; easily grown from seed, but transplanted with difficulty.

TAMARIX.—A deciduous flowering shrub, of considerable value.

JAPAN QUINCE (*Cydonia*).—In different varieties; the flowers are large and beautiful, of bright colors, covering the shrub in spring.

SNOWBALL (*Viburnum*).—Flowers white, in large globular clusters; very handsome.

SPIREA.—Several varieties succeed well, prominently those known as Bridal Wreath, Billardi and Elm-leafed Spirea.

SYRINGA, MOCK ORANGE (*Philadelphus*).—The large-flowered and fragrant varieties are very satisfactory.

COMMON SMOOTH SUMACH (*Rhus glabra*).—Foliage handsome, deep red, in autumn. (This plant is frequently defoliated by the leaf-eating beetle, *Blepharida rhois.*)

BLADDER-NUT (*Staphylea trifolia*).—Foliage pleasing, light green; flowers white, in pendent cymes; native shrub.

ROSE ACACIA.—Highly ornamental; flowers large, rose-colored and white.

RED-BUD.—Native; susceptible of great improvement in cultivation.

JERSEY TEA (*Ceanothus.*)—Low, perennial, shrubby plant; flowers white, fragrant, in clusters, covering the whole bush.

CHOKE CHERRY.—A pleasing, native tree; flowers in racemes, white and fragrant.

SNOWBERRY (*Symphoricarpus racemosus*).—Flowers small, white; leaves very persistent; berries large, waxy, white, remaining on the bush until mid-winter.

CORAL BERRY.—A low, native shrub, bearing a profusion of coral-red berries, that are persistent until severe frosts.

SWEET SUMACH (*Rhus aromatica*).—Native on rocky hills; a neat, compact shrub, two or three feet in height; foliage briliant after frost; fruit bright scarlet.

BUTTONBUSH (*Cephalanthus*).—It is native in low grounds.

DWARF CHESTNUT OAK (*Quercus prinoides*).—Abundant on stony hills; grows three to four feet high.

ALTHEA, OR ROSE OF SHARON.—Flowers in August and September.

WEIGELIA.—Rose-colored; blooms in May; pretty.

Any of the hardy roses.

PERENNIAL CLIMBERS.

VIRGINIA CREEPER (*Ampelopsis quinquefolia*).—A well-known and appreciated native climber.

TRUMPET VINE (*Tecoma radicans*).—Fine and hardy on the uplands, but sometimes becomes troublesome, through its habit of sprouting; flowers large, conspicuous.

BITTERSWEET (*Celastrus*).—An ornamental and rapid climber; fruit, orange and scarlet, conspicuous in winter.

CLIMBING HONEYSUCKLES.—All succeed, but the "Monthly Fragrant" most highly recommended.

CHINESE WISTARIA.—Rapidly growing climber; flowers blue, in large clusters.

ROSES.—The Prairie Queen and Seven Sisters are recommended as being quite hardy, while the Baltimore Belle is not entirely so.

APIOS TUBEROSA.—A native herbaceous climber; gives good results as an ornamental plant.

WILD BALSAM-APPLE.—A native annual, also recommended for general purposes; a climber of rapid growth; habit graceful; flowers borne in great profusion, white and fragrant.

VITIS INDIVISA.—A climbing vine resembling the wild grape, but of neater growth.

CLEMATIS.—American White and Leather-Flowered; both native.

PERENNIAL FLOWERING HERBS.

Many of the following list become more beautiful by cultivation:

ANEMONE.—Purple and white, double, native, blooming on the prairies in early spring.

COLUMBINE (*Aqualegia*).—Both native and exotic varieties succeed, and give much satisfaction.

LARKSPUR (*Delphinium*).—Both exotic and indigenous species cultivated with success.

DALEA LAXIFLORA.—A beautiful white-flowered plant, with slender, erect, graceful habit; native from Manhattan westward on the high prairies.

UNION GRASS (*Uniola*).—A beautiful native grass, growing in shaded spots; highly ornamental, and valuable for winter decoration.

VERBENA.—A trailing, pink-flowered native variety, does well in cultivation; flowers fragrant.

GAURA.—Tall herbs, covered with pink and white blossoms in late summer; very effective in thick clumps.

SENSITIVE BRIER (*Schrankia*).—Flowers rose, globular in shape, with a very delicate fragrance.

YUCCA.—The native and introduced varieties are equally satisfactory; quite hardy; leaves evergreen.

LOBELIA.—The blue and scarlet native species are both susceptible of cultivation, and have proved desirable.

EVENING PRIMROSE (*Œnothera Missouriensis*).—Flowers very large, yellow; native on the high ground around Manhattan.

LIATRIS.—Several species of this genus, all native, are well worth cultivating, and are easily transplanted.

ASCLEPIAS TUBEROSA.—An orange-flowered native milkweed that is very ornamental in cultivation.

PENSTEMON GRANDIFLORUS AND P. COBÆA.—Flowers large, light purple or whitish; native on rocky hills.

WHITE WATER-LILY (*Nymphœa odorata*).—Flowers large, white, fragrant; native in southeastern Kansas.

YELLOW WATER-LILY, OR CHINQUAPIN (*Nelumbium luteum*).—Flowers five to ten inches broad, yellowish white; leaves one to two feet across; native in eastern Kansas.

LADIES' TRESSES (*Spiranthes*).—A beautiful orchidaceous plant, with a spiral of white, fragrant flowers.

WHITE-FRINGED PRAIRIE ORCHIS (*O. leucophœa*).—Very fragrant and handsome; well worth cultivation.

GROUND PLUM (*Astragalus caryocarpus*).—Very early, pink; improves in cultivation.

DIANTHUS, OR CHINESE PINK.

PERENNIAL PHLOXES.—Native and exotic.

EUPATORIUM AGERATOIDES.—Flowers white, in late autumn; beautiful.

Varieties of Iris, Tulips, Narcissus, Lilies, Gladiolus and Pæonies are very satisfactory.

MIAMI COUNTY HORTICULTURAL SOCIETY.

(Organized April 26, 1879.)

REPORTED BY THE PRESIDENT.

Officers for 1880:

President—J. M. DeBall, Fontana.

Vice President—J. B. Remington, Fontana.

Secretary—E. W. Robinson, Paola.

Treasurer—R. H. Sherar, Paola.

Meetings are held semi-annually.

MONTGOMERY COUNTY HORTICULTURAL SOCIETY.

(Organized March 20, 1877.)

REPORTED BY THE SECRETARY.

An election for officers for the current year resulted as follows:

President—M. D. Henry, Independence.

Vice President—A. A. Stewart, Independence.

Treasurer—Jacob Addison, Independence.

Secretary—L. A. Walker, Independence.

Agreeably to the regulations of the Society, the second annual meeting convened at the court house, in Independence, Saturday, January 17, 1880.

The President being absent, the Hon. Wm. Huston was chosen chairman.

The annual report of the Treasurer was submitted, showing a balance in the treasury of $4.60.

The Secretary's report was read, received, and approved.

Several additional names were enrolled on the list of membership for 1880.

It was decided that meetings be held at several points during this year, commencing in the early part of May next; that we accept the invitation tendered by the Hon. Wm. Huston, of Liberty township, to hold the first meeting at his place, and that publication of the time be made in the county press.

SECRETARY'S REPORT.

In the review of this Society's transactions in 1879, only moderate evidences are manifest in regard to progress in the development of fruits, nor very strong proof of active work as a society.

An unpropitious year had its effect; for there is no denying the fact which close observers have noticed, and so recorded, "that much of fruit growing is involved in the question of profit and loss, causing us to overlook to some extent the great range of horticultural pursuits that go greatly beyond the consideration of dollars and cents."

As a society, we have yet to adopt a plan of operations that will enlist a more thorough interchange of ideas and an increase of active membership. Nevertheless, the fruit interests of Montgomery county are too substantially rooted to presume that we will not advance. But this is not enough: to excel is our privilege—to accomplish which, we must work. To doubt is to fail.

The significant expressions of the President of the Kansas State Horticultural Society, in communicating his views at the late annual meeting in December, are particularly encouraging to us and the fruit growers on this line of latitude. His remarks were in part as follows: "Another matter specially worthy of our constant attention is, the securing of trees, fruits, shrubs, flowers and vegetables suitable to the peculiar climatic conditions of this State. Our fruit may be gathered up from every State in the Union, but experience so far points to the Sunny South as the source from which we shall gather our apples, if not other fruits; and while the Ben Davis, Rawles Genet, Missouri Pippin and some other varieties gradually creep to the front, we shall be constrained to look to our own State or a more southern latitude for better fruit and longer keepers."

These opinions must not be overlooked by us.

At our last meeting it was ordered that premiums should be awarded by this Society for the showing of fruits, flowers and vegetables on the tables of the Montgomery County Agricultural Society at the fall meeting in 1879, in response to which there was a good display of apples of the following varieties, in part, viz.: Ben Davis, Winesap, Rawles Genet, Rambo, Fall Pippin, Wagener, Willow Twig, Missouri Pippin, White Winter Pearmain, Maiden's Blush, Limber Twig, Jonathan, etc., etc., together with a number of varieties not named and not entered for premiums.

Premiums were awarded to Mr. B. F. Warner and T. Overfield on the fruits shown from their orchards, and to Mrs. G. W. Green for the best display of plants and flowers.

Fine samples of grape wine, from Mr. I. Lipple, of Louisburgh township; and blackberry wine, by Messrs. I. A. Anderson, of Drum Creek, and Carey Oakes, of Independence, were on exhibition.

The display of vegetables was extensive, and in quality equal to the growth that should be expected of rich soil and good cultivation.

No other exhibitions were held under the auspices of this Society, and the partial failure of the peach crop in a great measure hindered shipments beyond the limits of the county. Small fruits in their season were not in the usual abundance that we were led to expect from the experience of other years, but there were enough to compensate the growers well for the amount raised. Grapes were especially favored in all that tended naturally to the maturing of the fruit and the healthy condition of the vines, the season throughout being favorable.

The introduction of the tame grasses to replace the native, and for ornamentation, is a subject that is now forcing itself upon our consideration, and which as yet is but resting on the varied results of the limited number that have planted, and the gradual increase of success shown here and there and everywhere; that care coupled with experience has been practiced.

While we are, by the nature of our organization as a society, auxiliary to that of the State, there is a manifest propriety in including in our work, and in our annual reports, enough of information from time to time to justify a notice of our operations in the annual reports of the State Horticultural Society.

PAWNEE COUNTY HORTICULTURAL SOCIETY.

(Organized March 28, 1877.)

REPORTED BY THE SECRETARY.

Officers for 1880:
President — L. Manning, Garfield.
Vice President — Wm. Gill, Larned.
Secretary — R. B. Gee, Garfield.
Treasurer — J. W. Granger, Garfield.

POTTAWATOMIE COUNTY HORTICULTURAL SOCIETY.

(Organized January 31, 1880.)

REPORTED BY THE SECRETARY.

President — Eph. McKee, Americus City.
Vice President — R. M. Croy, Havensville.
Secretary — J. J. Measer, Vienna.
Treasurer — C. B. Huffman, Vienna.
Meetings are held monthly.

RENO COUNTY HORTICULTURAL SOCIETY.

REPORTED BY THE SECRETARY.

Officers for 1880:
President — L. Houk, Hutchinson.
Vice President — A. M. Switzer, Hutchinson.

Secretary—L. J. Templin, Hutchinson.
Treasurer—C. L. Easley, Hutchinson.
Executive Committee—A. L. Dimock, C. Bishir, L. J. Cole, Hutchinson.

REPORT ON SMALL FRUITS.

BY C. BISHIR.

[Read before the Horticultural Society of Reno county, February 1, 1879.]

In preparing this paper, I have drawn largely from the reports of the State Horticultural Society as well as my own experience and observations, nor have I confined myself to what might be called a report proper, but have ventured to make a few suggestions.

The magnitude of the subject of small fruits forbids more than a passing notice of one or two varieties under each of the various heads included in the term small fruits. Usually, only strawberries, raspberries, blackberries, currants and gooseberries are considered under the head of small fruits; but properly grapes, plums, mulberries and cherries may be included. I shall speak briefly of each.

I was reared where Nature's bounteous hand lavished profusely many of her choicest small fruits by the way, that in their season her feathered songsters might feast, and fly away giving a sweet song of praise to the Giver of all; that the wayfarer might find a delicate morsel to quicken his weary steps, and cause him, with gratitude in his heart, to go on his way rejoicing; and that romping bevies of children, whether rambling among the grand old forests, leaping over fallen timber, climbing in their boughs, or creeping in the grass, might regale themselves, and return home to be "spanked" for staining their new hats and aprons with berry juice.

This last fitly illustrated the esteem in which the small fruits are held in many places. If nature provides them and the women and children gather them, all is well; but as for man!—dignified man!—it would be getting down rather too low for him to pick or raise berries; his calling is to maul rails and make fences.

Happily for us, we have no rails or fence to make here, and I think we can put in our time more profitably raising small fruits; and I submit, too, that there is no calling more refining and elevating than the raising of small fruits, and that it is cheaper and better in any country to raise than to gather them where they grow wild. Who has not seen women and children wet to their waists in cold dew, and their clothes all "tattered and torn," by their frantic efforts to collect a few quarts of wild blackberries, and then have the "chills" the balance of the season? I have even seen here whole families with a team driving over the sand-hills, exposed to mosquitoes, flies and snakes for days, to collect a few bushels of sand plums, which they usually had to gather quite green or not get any, when a quart of pits planted and cultivated for three years would return a handsome profit, besides all the family could use of fine plums, which might be allowed to hang on the bushes till fully ripe, and would thus be more healthful than the green things usually gathered wild. But these illustrations will suffice. Vine culture is evidently a very ancient and honorable occupation. We are not told what the forbidden fruit was, but what could more fitly represent it than the cherry? The first to bloom in the spring, it becomes like a mammoth bouquet of beautiful, white, fragrant flowers, and when laden with its delicate, dark crimson fruit, what is more tempting?

The first cultivation of most of our present small fruits is evidently very recent, as many of them are chance seedlings of native varieties, improved by cultivation, some of them first introduced within the memory of most of us. We should therefore be encouraged, that though the cultivation of some of the small fruits has been handed down to us through ages, yet within the last quarter of a century more improvements have been made in small fruits than in any corresponding period before. But this Society expects from this report something more than glittering generalities; you expect the results of experience in this State, and in this county.

It is a well-established horticultural fact, that most fruits do not succeed equally well in different sections of the country, or different soils and localities, and that a few varieties bear these changes better than others. We, therefore, as a practical society, working for the benefit of ourselves and the community in which we live, are bound to accept these facts, and work in accordance therewith. Now from what source are we to gain this information? I answer, from our own experience, and that of others. There is nothing that will prove these facts but experience; and experience sometimes teaches a dear school, as many of us know too well.

But you say, can I not know what to plant, and how to cultivate, until I have proved it by experimenting? I say, some one must prove it by experimenting; but you need not go over the same ground and suffer the same losses that your neighbor has done. You should profit by his experience, and that is just what these local and State horticultural societies are for —mutual helps to each other, and consequently a help to each individual member. This State has been settled by people from every State in the Union, and many direct from foreign countries, each bringing with him the small fruits peculiar to his own particular country, State or locality, and generally commenced their cultivation the same as he had done at home, so that almost every variety of small fruits has been tried in this State, and with almost every conceivable mode of cultivation. It is needless to say that the great majority of varieties have been either total or comparative failures. But just here comes in a very important part of the work of the State Horticultural Society, to eliminate from this mass the worthless varieties, and present in a clear and forcible manner those varieties most worthy of our confidence, that will most likely produce the largest return for the amount of outlay. With these facts before us, I cannot do better than copy from their voted lists, as given in the State Horticultural Report for 1877. I copy only those varieties considered first and second best for general cultivation:

Currants—Red Dutch, White Grape; gooseberries—Houghton, Pale Red; raspberries—Doolittle, Miami; blackberries—Kittatinny, Lawton; strawberries—Wilson's Albany, Charles Downing; grapes—Concord, Ives; cherries—Early Richmond, common Morello; plums—Wild Goose, Miner.

Mulberries I do not find in their lists, but from experiments with the Russian mulberry here, I am led to hope that it will enter into general cultivation. Nothing could be better suited for wind-breaks around an orchard, and its fruit would be a fine encouragement for our friends, the birds, to feel more at home in our orchards. It makes a rapid growth, is very bushy, and fruits at three or four years old.

The cultivation of plums has been abandoned generally, on account of the curculio, but our native sand plums, so far, have been comparatively free from its attack; and I believe they may be greatly improved by selecting the seeds from the best varieties, and if grown in the poultry yard, nothing makes a finer shade for the fowls, and they in turn will keep the plums free from the dread curculio.

I know of at least one man in this county who raised this season a fine lot of Early Richmond cherries from trees planted four years. Those grown from sprouts from their own roots are best; they should have good, clean cultivation. The common Morello cherries have done best with me. They bore two years ago, which was the second year from the planting, and also this season. Some object to them because they sprout. I consider it a great recommendation to them, as it is a very cheap way of propagating so valuable a tree. Dig up all the sprouts every spring, and cultivate them in nursery-rows two years, and then plant them. Don't be afraid of getting too many cherry trees. Everybody's children like the fruit; everybody's wife likes to have it; and everybody's birds will congregate in your trees, and help you gather the fruit. Then don't fail to plant "lots" of cherry trees. Plant them around your house; plant them around your barn; plant them around your orchard; plant them along the highways, where the passer-by may feast, and feel that you are a generous man. No tree is freer from insects, or will stand more neglect and rough usage, than the common Morello cherry. It always pays its rent for the ground occupied.

The first grapes that I know of being raised in this county, were by Mr. Dodds. In 1874 he had a few Concord vines which he allowed the weeds to overrun so completely that they were not injured by the grasshoppers of that year, and the next year he had about a bushel of grapes. In 1876 Mr. Gunn raised nine pounds of grapes from six Concord vines, only two years old. With me, the Concord, Hartford Prolific and Clinton have all done well, and are now in fine condition. A very good method for the first two years is to cultivate until the vines begin to run, then lay brush flat on the ground for them to cling to, and they will not be injured by the wind. The third year I would trellis, mulch heavily and prune sparingly. The Clinton may be allowed to run in the top of any bushy tree, and, with no other care than to keep the ground mulched, will bear you fine crops of small, black grapes, which improve in quality if allowed to hang late upon the vines. Any soil that will raise good corn, wheat or vegetables, will raise Concord grapes; and as the vines can now be had so cheap, every family should raise an abundance of them.

The Houghton gooseberry has proved to be very hardy and profitable with me. I think it is not sufficiently well esteemed by the public generally, when I consider how easy it is to raise, how soon it comes into bearing, and the amount of profit that may be realized from a small patch. The objection to it generally is, that it is sour. As well might they object to pickles for the same reason, as gooseberries are ready for use the earliest of any other fruit, and just at the time when pickles are most relished; and indeed if they were substituted for pickles, and used for the sour's sake, and not try to doctor them up with sugar, they would be much more healthful than pickles, and likely ward off many a doctor's call. Twenty dollars clear profit per acre for corn or wheat would be considered a handsome profit, and yet how often is ten times that amount realized on any of the small fruits! This season I sold forty dollars' worth of gooseberries from one-seventh of an acre, or an average of $280 per acre, beside the root layers, which are worth about a hundred dollars more. Now it is said, show a man that there is profit in a thing, and he is ready to invest. Can you show me anything that will "pan out" better than the Houghton gooseberry?

I have had the red and white Dutch currants growing for three years, but do not consider them profitable. I hope, however, to get a fair substitute for them out of our natives. They are perfectly hardy and very productive, though not very palatable when green or raw, but when cooked make good sauce or pies, and excellent jelly.

With sufficient care, strawberries succeed well here. The Wilson's Albany has done well with me; have fruited it two years, and have a fine bed now. Mr. Switzer, on higher land, has done best with the Colonel Cheney and French Seedling, of which he had a fine crop this season. They all require good cultivation through the season, except while the fruit is on. A light mulch should be placed between the rows, then removed until winter, when the whole must be covered lightly with hay or stalks, and not removed until late in the spring. It is my observation that the strawberry is the most difficult of any of the small fruits to grow successfully; but when properly handled, and the crop "hits" well, it is the most profitable of all.

The Doolittle raspberry should have a place in every garden. A few hills will supply the tea-table with a fine dish every day for a month. For a sure market variety, plant the McCormick. Pinch back the canes at two feet high, and the laterals at one foot long. It has been said that there was no red raspberry that could be depended on in this State, but the experience with the Turner the last two years has led many to hope that it is the coming red raspberry. It is not very hardy, but fruited well this season. Mr. Switzer was quite successful with it. If it stands this winter, we shall have a great acquisition in the Turner raspberry.

I mention, lastly, the Kittatinny blackberry, and it reminds me of what the man said of the balky horse: "Sir," said he, "just hitch that horse to a wagon, and he is there." So with blackberries; just plant a patch of them, and there they are, to stay, however badly neglected. After they have been well cultivated for two years, they will over-top and smother down everything else, and produce a great amount of fruit with but little care. Stock will not destroy them. They may harbor rabbits, but not be injured by them. Dig up a root, and you will have four in its place. Fire or grasshoppers may devour them, but you have to wait only one year until you will have a worse thicket than ever. Universally acknowledged to be the most valuable wild fruit that grows, how can they do less than stand at the head of the list of small fruits when touched by the magic wand of scientific cultivation. But some will not plant them for fear their farms will be overrun by them. What an idea! Why, one crop from one hundred and sixty acres of blackberries would buy the best farm in the county. Then, I say, don't be afraid to plant blackberries. Plant them for your children — the fruit will do them more good than paregoric; plant them for your neighbors, that they may visit you the oftener; and plant them for the birds, where they may build their nests, rear their young, feed on the fruit, and sing songs that will make you happy. For the best results, mulch well and trim; but if you can't do that, let them run, and they will make you more money than all the pigs that run on your farm.

In conclusion, allow a word of warning: *Be careful how you invest in new varieties and novelties.*

REPUBLIC COUNTY HORTICULTURAL SOCIETY.

(Organized October 11, 1879.)

BY W. P. PEAKE, SECRETARY.

Officers for 1880:

President— O. A. Gardner, Belleville.
Vice President—J. A. Mosher, Belleville.
Secretary—W. P. Peake, Belleville.
Treasurer—E. Powell, Belleville.
Trustees—N. T. Van Natta, Adam Dixon, Dr. H. Patrick, Belleville.

RICE COUNTY HORTICULTURAL SOCIETY.

(Organized November 5, 1877.

REPORTED BY THE SECRETARY.

Officers for 1880:
President—J. B. Schlichter, Sterling.
Vice President—Wm. Q. Elliott, Sterling.
Secretary—J. H. Stubbs, Sterling.
Treasurer—Sam. B. Hampton, Sterling.

Meeting held at the residence of the President, July 1, 1879.

President Schlichter took the chair at 10 o'clock A. M.; called the meeting to order, and appointed Dr. G. Bohrer, J. H. Stubbs and John Van Patten a committee to report on the work and condition of Mr. Schlichter's grounds.

The committee proceeded to the examination of the apple, cherry, peach, Dwarf or Rocky Mountain cherry trees, wind-breaks, blackberry and raspberry patches, grape-vines, and Osage orange hedges, but were called back to partake of a sumptuous dinner which was announced as waiting.

The members present, including several ladies, repaired to the basement of Brother Schlichter's elegant patent stone residence, where they found the table loaded with the good things prepared by the brother's good lady for the refreshing of their physical systems. By request, Jno. Van Patten asked the Lord to bless the food prepared for them, after which, all partook of a hearty dinner, for which they returned their most sincere thanks to Brother Schlichter and wife.

After dinner the Society repaired to the sitting-room, where the members spent a half-hour in social conversation. The committee again resumed its labors. After the committee had finished its examination, an hour or more was spent in conversation on the various subjects pertaining to horticulture.

On motion, it was ordered that when this meeting adjourn, it adjourn to meet at the house of J. H. Stubbs, in the corporate limits of the city of Sterling, on Tuesday, August 5th, at 10 o'clock A. M. In the afternoon of that day, Dr. Bohrer will deliver a lecture, at the Friends' church, on roadside, fruit, and forest-tree culture.

REPORT OF THE COMMITTEE.

Your committee beg leave to make the following report: We commenced the examination with the Rocky Mountain cherry. The trees (or rather bushes) had been transplanted four years, the tallest of which were about four and one-half feet high. There were a number of ripe cherries on the larger bushes near the size of Black Morello, but rather pungent in taste, yet they cook quite well, are sweeter than the Morello, and in consideration of their coming into bearing so young, are a valuable acquisition. They are enormous bearers, and make good groves.

We found about two hundred apple trees planted, from one to two years old, most of which were in fine growing condition, where they had been cultivated. But they nearly all need more pruning. Fine crab-apple trees of the Transcendent variety, were in a good condition.

We also found over two thousand peach trees, all of which were seedlings except about fifty trees. The peach trees were from one to seven years old, and a large majority of the trees were in fine growing condition, but some of them were much injured by the borer, and a considerable portion of them had not had any pruning for years. Quite a number of the older trees had peaches on them. We found one Amsden's June that had a few fine peaches on it, nearly ripe.

There were a few pear trees in fair condition.

The blackberry and raspberry bushes were much injured by freezing last winter, yet there were some fine berries on them.

The seventy-five grape vines were growing finely, with some grapes on them. They are allowed to trail on the ground.

We found quite a number of sand plum trees, with fruit on them nearly ripe, a number of them but two years old.

Roses and other shrubs have not done well, owing to a lack of rains.

The wind-breaks are composed of 2 rows of cottonwood trees 5 years old, feet apart, some of them 6 inches in diameter; 4 rows of black walnut, 4 feet apart and 4 years old, and 4 rows of peach trees, 4 feet apart and 4 years old. We found it made an effective wind-break.

We found a number of other forest trees within the limits of the orchard, consisting of black walnut, white ash, black locust, and honey locust with and without thorns, all of which had made a fine growth, where cultivated. The committee are of the opinion that Brother Schlichter's trees have needed a great deal more care and pruning than they have had, yet we believe that he has done the best he could with the amount of capital and labor at his command, and that under the circumstances his efforts have been a success.

The report was signed by G. Bohrer, J. H. Stubbs and Jno. Van Patten.

On motion the meeting then adjourned.

SALINE COUNTY HORTICULTURAL SOCIETY.

(Organized December 15, 1877.)

REPORTED BY THE SECRETARY.

Officers for 1880:

President—Robert Anderson, Salina.

Vice President—U. S. Hall, Salina.

Secretary—R. H. Bishop, Salina.

Treasurer—B. B. Stimmell, Salina.

The annual meeting is held on the first Monday in February.

WABAUNSEE COUNTY HORTICULTURAL SOCIETY.

REPORTED BY THE SECRETARY.

Officers for 1880:

President—Abner Allen, Wabaunsee.

Secretary—H. A. Stiles, Pavilion.

Meetings are held monthly.

(The following papers, read before the Society in 1879, have been furnished for publication.—SECRETARY.)

ADDRESS.

BY THE PRESIDENT.

Ladies and Gentlemen of the Wabaunsee Horticultural Society: We are thankful that we are again permitted to be present at our annual meeting, for counsel and encouragement. In union it is hoped that we shall find means to surmount all obstacles to the successful prosecution of our favorite pursuits. During the past season the bounties of Pomona have not been bestowed with her usual liberality; it therefore becomes our duty to consider carefully the causes which have produced unfavorable results in the past, and as far as possible adopt means or apply remedies, to guard against like results in the future. It is estimated that three-fourths of the apple crop of the State the past year, was produced by a single variety, the Rawles Genet, which escaped the destructive freezing of the fruit buds, by which other kinds were rendered unproductive. This fact would seem to be conclusive that too little attention has been paid to varieties having the desirable quality of remaining dormant in a temperature which causes other kinds to put forth. We consider this a matter of great importance, for the reason that seasons such as the past are not likely to be rare in the future, if we may judge by the experience of past years, in this trying climate.

In order that we may fully realize the great progress that has been made in horticulture, let us inquire as to the condition it was in a few years ago. Some of those present will remember when it was difficult, if not impossible, to get such varieties of any class of fruits as would now be considered indispensable in almost any collection, and some of us remember when seedling orchards were common in many portions of the country. Budded peaches, ripening the middle of August, were a curiosity. A very few of our choice apples and pears were then known, but to a few persons. Grafts were carried from settlements in the East, to the West, on horseback, in saddle-bags—in some instances, more than a thousand miles—and distributed by the way, among friends. The choice varieties which have since been scattered over the country were then known in but few localities. Nurseries were few and far between, and but few of them had many of the varieties of fruit trees that are now considered desirable. New varieties were not heralded to the country, but were subjected to the wholesome discipline of neglect, and their merits were made known by intrinsic worth. Nomenclature was in utter confusion. How changed are the conditions now! We have vast establishments for the propagation of plants of all kinds. Every habitable portion of the world is ransacked for contributions of fruits, flowers, etc., which the railroads, the express and the mails distribute to the remotest settlements. Comparative order, at least, has been evolved, as it were, out of chaos. Most kinds of fruits are now known by their true names, not only in this, but, to some extent, in other countries.

Gentlemen, you can each of you view the situation in the light of the present time, and make comparisons of the present and past of horticulture. The great achievements which I think are apparent to you all, are to some extent the result of union and concert among horticulturists, but perhaps we owe most to circumstances that are peculiar to the present age. The ease and rapidity of communication with the different portions of the world have stimulated the various enterprises of each locality. The improved methods of preserving and transporting tender or perishable fruits have caused a vast increase in their production. The annual value of the fruit produced by our country at the present time is estimated to amount to the enormous sum of one hundred and forty millions of dollars. Vast as this sum appears, it is only about three dollars per head, when apportioned among the multitude. The supply seems to me to be inadequate, and it may be fair to infer that the pockets of some of the boys are destitute of more than one desirable article.

It is the duty of each individual to do what he can to promote the happiness and welfare of mankind. Then let us all labor diligently in the field of horticulture, to the end that those productions which are essential to health and happiness may be the delight and joy of all.

THE LONGEVITY OF ORCHARDS.

BY ENOCH PRATT.

We have had hardly sufficient experience in this State to speak with any degree of certainty on this subject, but I think that as an orchard tree, the peach must be considered very short-lived, and the extremes of our climate are such that the best way is to set some trees every year.

The pear can be considered only as an experiment, and although in localities favorable to its growth it is considered very long-lived, yet from the result of the experiments so far, I think that here it will prove to be very ephemeral.

But to come to our most important orchard tree, the apple, we may lay down the proposition as almost an axiom, that those varieties which come into bearing young, will decay young; and while I would certainly advise setting varieties which come into bearing young, I would also set out those varieties often, so as not to be without them. It is set down as a kind of general principle in races of animal life, that the period of growth till maturity for bearing is about one-third of the life of that species; with some kinds of animals, that period is only about one-fourth of the estimated longevity of the species. This rule, although not exactly accurate in each individual, is considered as nearly correct; in fact, at least near enough to estimate the probable longevity of a species or race. I think the same rule will hold good in regard to varieties of orchard trees. Take those varieties which are expected to bear in some five or six years: we may expect them to run their race, and die of old age in from fifteen to twenty-five years; and those varieties which are twenty years coming to maturity for bearing, we may hope to see live and bear to sixty or a hundred years, barring casualties, just as casualties and sickness are in the animal races.

PRUNING.

BY ABNER ALLEN.

In order to thoroughly understand this subject, we must first consider why we prune. No treatment can be worse than the haphazard mode of cutting and slashing. Pruning should always be done with some definite object in view, and never with the idea that you are adding anything to the tree. On the contrary, we must regard pruning as a necessary discipline to force the tree to assume the form best calculated for the purpose we have in view. We prune for beauty and utility; we want our trees to be an ornament to our homes; we want them so proportioned that they can support their crops of fruit, without either breaking or splitting in consequence of the weight, or from the pressure of the winds. To secure these objects, a strong central stem should be encouraged, the side-branches should diverge at a large angle, for if too upright they may become forked, and those who grow forked trees will have cause to regret it. We will commence on trees that are two years old, as they are taken from the nursery: cut out all forks, head in the side-branches, leaving the most central branch to form the main stem, and do not disturb any of the spurs that have formed on the body of the tree. These form limbs which diverge at the proper angle from the trunk. The next year cut out all the upright shoots except the most central one, and shorten the side-branches to give the tree a proper balance. Continue the treatment from year to year, as needed. But very little pruning will be required after the third year, when the form of the tree will be established. We have a tree that is perfect in all its proportions, the wood of the stem has grown around the side-branches so that splitting is impossible, the limbs are even-sized, though in time will be too close together, and will have to be thinned out gradually from year to year, to open the top as the tree acquires age and size. The great advantage of this mode is, that we are enabled to give the tree the form desired, and to have the head at any height from the ground which we may desire, without at any time being compelled to lop off large limbs, or endanger the tree by winter-killing in inducing late and succulent growth.

If we prune severely before trees are old enough to bear full crops, we may safely set it down as a rule, that the more we prune the less fruit we will get. So we should always exercise moderation in the use of the knife and saw. The most that should be done to trees that are from five to ten years old, is to take out all the limbs that are not growing in an outward direction, or those that cross or interfere with each other. No amount of care in the management of young trees will obviate the necessity of removing portions of the top when the trees become old. The weight of the fruit, and the increasing weight of the side-branches themselves, have a constant tendency to press them down toward the earth, and thus exclude some of the branches from the light, and the growth is principally concentrated in the more upright portions of the tree. So we should annually remove such limbs, when they have become too much shaded to produce good fruit from every part of the tree.

As to time of pruning, we prefer the fall and winter months, when the trees are not frozen. We would not prune when the trees are frozen, or from near the time of leafing out till the latter part of June, and then only small limbs should be taken off at that season, for while wounds heal very rapidly in the summer season, the wood is much more subject to decay than when the wound is made in the fall or winter.

Of the various compounds that are recommended for coating the wounds made in pruning, I prefer one made of three parts of rosin to one of tallow, applied hot. It is comparatively cheap, and answers the purpose perfectly. The proportions are not essential; but if there is too much tallow, the sun will melt it, while if very little is used, it might scale off in very cold weather. Pare the wounds smooth and close, and coat them with some compound that will protect them from the action of the elements. They will then soon heal over smooth. Nothing annoys us more than to see the stumps of limbs decaying, and inviting the attacks of borers to assist the owner in destroying his trees.

EXPERIMENTS WITH SMALL FRUITS.

BY H. A. STILES, PAVILION.

GRAPES.—The following kinds have proved tender with me: Isabella, Catawba, Diana, Iona, Israella, Allen's White Hybrid, Concord Chaselas, Concord Muscat, Lincoln Autuchon, and Walter. Some of them will succeed if protected in winter. The best way is to lay the vine on the ground and cover with boards or brush. I have abandoned the plan of covering with earth; it is apt to become too wet, and thus injure the buds. It will perhaps pay to protect most kinds of grapes by some means. The following kinds are generally sufficiently hardy, and the past winter they endured a temperature of twenty-four degrees below zero: Concord, Martha, Dracut Amber, Clinton, and Delaware. The White Delaware is not quite so hardy, but generally comes through the winter all right. I have had an opportunity of studying the grape-rot this season for the first time. I suspect that it is the work of insects.

RASPBERRIES.—The following kinds have proved tender: Red Antwerp, Yellow Antwerp, Brinkle's Orange, Clarke, Highland Hardy, Hudson River Antwerp, Southern Thornless, and others. The Antwerp family have failed or proved so tender that they do not seem worth the trouble required to grow them. Some success has attended persevering efforts with Philadelphia and Turner; they require winter protection. The Purple Cane is the only red variety that I have been reasonably successful with; it will generally endure the cold of our winters, but twenty-four degrees below zero the past winter was too much for it. It is propagated from the tips; has not the bad habit of suckering like the Antwerps. The following kinds are hardy: Ganargua, the hardiest and most productive, berries of the largest size; by some this is called a red variety; it is long in bearing, does not sucker; tips must be covered with earth or they will not take root. McCormick the best of the blackcap berries; large and very firm, and therefore good for shipping. Doolittle is a hardy and productive blackcap. The native blackcap is hardy in sheltered situations. There are many varieties, some of which may be sufficiently hardy under cultivation. Davidson's Thornless is an early blackcap, hardy in some situations; has not proved satisfactory with me. Miller's Dailey is a valuable ever-bearing blackcap, which continues in bearing all summer; berries of the largest size. Golden Thornless is a yellow-cap, which I consider a promising kind, though it suffered some the past winter from the extreme cold.

CURRANTS.—I cannot say that they are entirely successful, though my success with it has been such that I am encouraged to persevere. I believe that we shall yet produce fruit of this kind in abundance. I have Red and White Dutch, Victoria, White Grape, LaVersailles, and Cherry. Bushes are all doing well. Some fruited the past two years; this year the crop was light, owing to the freeze. They succeed best in partial shade.

STRAWBERRIES.—This fruit is sadly neglected. I hope it will receive more attention in the future. Some nice fruit grows wild here on prairie sod; therefore the careful cultivator may plant with almost a certainty of reward. Plant Wilson's Albany and Downer's Prolific.

The GOOSEBERRY succeeds so well that it seems needless to give directions about its culture. Signs of mildew have been apparent during the past two years, and it is feared that as the plants acquired age, it would become difficult to produce fair fruit on any but new land. At this time, there seems little if any cause for alarm. The present year's crop, though light, was fair, and free from mildew. So far as my observations have extended, the varieties that succeed best are Pale Red, Houghton, Mountain, and Downing. I have some English varieties, which do well some years; the bushes are not so hardy, and not generally so productive, but the berries are very large and nice.

The BLACKBERRY does not succeed on rich bottom land. I have different kinds growing on a hill-side, all doing as well as could be expected, considering the care they receive.

WASHINGTON COUNTY HORTICULTURAL SOCIETY.

(Organized April 3, 1880.)

REPORTED BY THE SECRETARY.

Officers for 1880:
President—Dr. Chas. Williamson, Washington.
Vice President—G. W. Williamson, Washington.
Secretary—E. J. Nason, Washington.
Treasurer—Wm. Cummins, Washington.
Trustees—Wm. Nemils, Wm. Bullemore, E. J. Weekley.

The regular meetings are held semi-annually, in June and October. Adjourned meetings are held monthly.

WYANDOTTE COUNTY HORTICULTURAL SOCIETY.

(Organized August 10, 1878.)

REPORTED BY THE SECRETARY.

Officers for 1880:
President—W. W. Dickinson, Wyandotte.
Vice President—C. H. Carpenter, Wyandotte.
Secretary—M. B. Neuman, Wyandotte.
Treasurer—Josiah Smith, Wyandotte.
Executive Committee—Geo. L. Kroh, Wyandotte; C. H. Carpenter, Wyandotte; Rudolph Wilty, Wyandotte; W. J. Huffaker, Quindaro; Capt. Wosbrooks, Braman Hill.

At the February meeting, "Pear Culture" was discussed.

President Dickinson gave a very discouraging account of his experience and observations of attempts at pear culture in Wyandotte county during the past twenty years, showing not exceeding ten per cent. of even partial success. This experience was corroborated by Capt. Crooks and Josiah Smith.

Mr. C. H. Carpenter, however, gave a more encouraging experience, and reported satisfactory results from his mode of culture. He has treated his pear trees to iron dust, saltpetre, beef brine, leached ashes and bones, and for the past five years his trees have been free from blight, and productive of fair crops of fruit.

All agreed that the best results were found where the ground was moist and cool.

After the discussion, it was unanimously resolved, "That from all our experiences and information, we have reason to believe that pear culture may be made a success in Wyandotte county."

At the March meeting, the subject of "Best varieties of apples for Wyandotte county" was discussed. After the varied observations of the members were expressed, the following varieties were recommended by majorities of votes:

Summer Apples—Early Harvest, Carolina Red June, Hawley, Keswick Codlin, and Lowell.

Autumn Apples—Maiden's Blush, Rambo, Fameuse, Mother, Porter, and Hubbardston Nonsuch.

Winter Apples—Winesap, Ben. Davis, Jonathan, Rawles Genet, Willow Twig, Rome Beauty, Smith's Cider, Baldwin, Grimes's Golden, Fallawater, and Yellow Bellflower.

At the May meeting, the discussion of "Fruits that stood the past winter best" was taken up.

Mr. Smith reported most of his budded peach trees killed, or irrecoverably damaged—early apples, and Ben. Davis and Winesap, not setting their fruit well. These will be nearly a total failure. No injury to the wood growth observable.

Mr. Bates reported all his old peach trees as badly injured, yet only one actually dead.

Capt. Crooks said his peach trees were all nearly dead. Same report was made by Mr. Dickinson, as to his peach trees, and those of his neighbors.

Mr. Neuman reported, as to his peach trees, that the Old Mixon Free was but little injured; that Wyandotte Chief, Troth's Early, Alexander and Ward's Late Free were not materially injured; Large Early York badly damaged; and Serrate Early York killed.

As to blackberries, raspberries and grapes, reports from all members more hopeful than at April meeting.

By general reports of members, it was shown that fair crops of apples may be expected from Maiden's Blush, Hawley, Early Joe, Porter, White Winter Pearmain, Rome Beauty, Rawles Genet, Smith's Cider, Northern Spy, and some others; but poor prospects for Wagener, McAfee Nonsuch, Winesap, and several other varieties.

At September meeting, President Dickinson made report of an extended examination of orchards in Wyandotte county, of which the following observations were of special interest, to wit:

Bearing qualities, so far as observed, most favorable with Ben Davis, White Winter Pearmain, Winesap, Rambo, Fall Pippin, Grimes's Golden, Rawles Genet, and Monmouth Pippin. Good crops of McAfee Nonsuch, Northern Spy, and Wagener. Northern Spy dropping rather badly. Rare specimens of Hubbardston Nonsuch, but of good quality.

Moderate pruning in April, May and June had resulted in marked vitality, heavy and healthy foliage and excellent crops of fair fruit, while severe pruning, neglected pruning, and too-late and too-early pruning had all resulted in deficient vitality, light foliage, and poor crops. He had also found insect enemies most numerous and destructive in orchards of severe and of neglected pruning, Winter-pruned orchards had shown bad results every way.

In the discussion of this report, its views were generally concurred in by the members present.

GRANT TOWNSHIP HORTICULTURAL SOCIETY—SEDGWICK COUNTY.

(Organized April 3, 1880.)

Officers for 1880:
President—G. K. Ayers, Sunny Dale.
Vice President—N. H. Dewing, Sunny Dale.
Secretary—Dr. T. J. Miller, Sunny Dale.
Treasurer—Wm. McCracken, Sunny Dale.
Meetings are held on the first Saturday of each month.

MISCELLANEOUS PAPERS.

GRAPE ROT.

BY PROF. F. HAWN, LEAVENWORTH.

The following circular was issued from the Agricultural Department, at Washington, D. C.:

"DEPARTMENT OF AGRICULTURE, WASHINGTON, D. C., June 28, 1879.

"DEAR SIR: From the investigations of last season on the *grape rot*, it is thought that the rot may be a fermentation, caused by the fungus known as the *Torula Sacchari* (or *cerevisiæ*), or 'yeast or vinegar plant.'

"This fungus requires, for its germination and growth, high temperature and contact with some saccharine or albuminous substance.

"From all the indications, the grape is thought to be in the best condition for attack, and most susceptible to this disease, at the time of the formation and hardening of the seeds, as the vine at this period secretes the substance most inviting to this fungus.

"To arrive, therefore, at a better and more satisfactory conclusion in this connection, you are earnestly and respectfully requested, from as careful observations as possible, to answer substantially the following questions.

"Respectfully, WILLIAM G. LE DUC, *Commissioner.*

"QUESTIONS.

"1. Is the grape attacked by rot at any other period of its growth than that known as the time of 'forming and hardening of the seed?' If so, at what other stages of its growth, and in what proportion of instances, and in what proportion of the crop?

"2. What is the degree of temperature of the air at which the rot commences, and under what temperature does it flourish or decline?

"3. Will the moisture of the ground be sufficient to germinate and support the rot, without also excess of moisture in the atmosphere?

"4. What is the locality, exposure, drainage, soil, etc., of the vineyard observed, the variety and age of the vines, mode of sheltering the canes, etc.?"

In answer to the above, I would observe that I am a tyro in the vine-dressing art; have a few hundred vines of the Concord, on ground that originally was a hazel-patch; soil two feet deep of black vegetable matter, mixed with sand; on a subsoil of bluff silicious marl, that absorbs water freely, but no facilities for surface-draining.

Last year was my first crop; partially destroyed by hail, but no rot. The canes grew rampant, with long-jointed wood, that I attempted to check by frequent nippings during the summer.

In my pruning last spring, I had in view the curbing of the exuberant growth by loading the vines down with fruit, and left everything that I supposed would bear a cluster. When the fruit began to set, I nipped twice to two buds in advance of the clusters; summer, pruned at no particular time, but as a cane tended to advance too far, I nipped the end. I harvested an enormous crop, did not lose one per cent. by rot, and have an abundance of such wood as anyone would admire.

My neighbor, a few hundred yards distant on the south, has a vineyard of two acres of Concords and a few Ives, on stiff clay (which is sometimes termed oak soil) that had been somewhat exhausted by previous tillage; has not been renovated since, and received no tillage for the last two years. It is eminently a sheltered locality, by timber and topography; in from the gentle winds; with a small stream of water within two hundred feet on the south; surface drain favorable. This spring the vines were excessively pruned, as also in the summer, which had been the practice in times past. Last year the loss here amounted to twenty per cent., and this year seventy-five per cent., and on several previous seasons a total failure. In several instances I found canes that had fallen from their moorings to the ground that were exempt from rot, but the vines of which these were a part were also comparatively free from rot, and were of thrifty growth.

At what time these canes fell to the ground I had no means of ascertaining, but from the growth of the weeds supposed it to have occurred early in the season. The few Ives in the vineyard were without a blemish.

Attached to this vineyard is a small addition of Concords in its second bearing; the loss here was about fifty per cent.

On the east end of the vineyard is an arbor, ten feet in height, that had received no tillage in ten years, but on better ground; pruned in the spring like the vineyard, but not summer-pruned. The loss by rot was about forty per cent.

East of this, about six hundred yards distant, is a vineyard of about half an acre of Concords, on very rich soil (it once had been a cattle-yard), effectually sheltered, except on the east; no surface drainage; close pruned in the spring, and no summer pruning except in checking rambling canes. This season produced the second crop, and no rot. The ground had not been worked since the planting of the vines.

About one-half a mile from this, on a steep slope of the high bluffs, with an eastern exposure, is a vineyard of Concord grapes, sixteen years old; the soil originally thin; resting on a sandy shale, and now mostly washed away, exposing the shale in many places. The spring pruning was on the renewal plan, leaving four canes three feet long to the vine; no summer pruning and no rot this fall.

The rot, with me, commenced on the 19th of July, when the maximum temperature on several days previous reached 95°, with a daily mean of 75° and above; the average daily humidity not below 72 per cent.; the ground saturated by rains, and scarcely any winds. These were more or less the atmospheric conditions during the prevalence of the rot, with a fog on two mornings.

(Old cultivators of the vine here, associate these fogs with the rot — that wherever they gather and settle the rot will prevail; hence, sometimes the rot on high grounds prevails over the vineyards on lower levels.)

The seed then had attained about two-thirds of its full size, with the consistency of a green chestnut; but at the termination of the rot it was of full size, and indurated.

With me, the disease was less prevalent on top of the trellis; more in the middle, and on many of the vines the clusters touched the ground without rot, and moreover, where the foliage was so dense that subsequent precautions had to be taken to induce the fruit to ripen.

The rot does not spread uniformly through the vineyard. In mine it was confined to three or four vines in different parts of the vineyard. In its incipient stage it presented a small dot on the surface of the berry, that, from a casual observation, might have been taken as the residuum of an exuding sap from the grape, caused by the puncture of an insect; but by an examination under the glass, it was found to be a foreign substance of a ferruginous brown color, attached to the skin of the fruit, with a minute cavity at the attachment. Around this a regular disk was developed, which could readily be recognized by its paler color. This disk, under favorable circumstances, soon enveloped the whole of the berry with a total disintegration. But on the return of fair weather and the normal humidity of the atmosphere, the growth of this disk was arrested, and when not too far extended, the grape proceeded to maturity, but the fruit had an insipid flavor. The disk, when arrested, assumes a leathery appearance, slightly depressed, or of "chancre" form.

SELF-FERTILIZATION AND CROSS-FERTILIZATION.

BY PROF. J. H. CARRUTH.

It I mistake not, the early botanists believed that when both stamens and pistils are found in the same blossom, the fertilization takes place between them. They tell us that when the flower is erect, the stamens are longer, so that the pollen may fall on the stigma; but when the flower is pendent, the pistil is longer. In the *American Agriculturist* for 1877 and 1878 is a series of illustrated articles by Prof. Gray, designed to show how in some plants the fertilization cannot take place between stamens and pistils of the same flower. Sometimes it is prevented by the form of the blossom, and sometimes the two sets or organs are not both ready at the same time. In such cases, the pollen is brought to the pistil from some other blossom by the wind, or by insects. In other plants, fertilization does take place in the same flower; in the phlox, I see not how it can be otherwise, for the stamens never come out of their narrow tube.

In a periodical of July, 1877, I saw an account of experiments by Mr. Darwin, showing that in some plants, seeds produced by self-fertilization produce plants not so large nor so productive as those produced by cross-fertilization. Stamens and pistils in the same flower are brothers and sisters; those in the same plant are cousins. One might suppose, that if fertilization by pollen from the same blossom were disadvantageous, it would be so, in some degree, when the pollen was from different blossoms of the same plant; yet there seem to be no arrangements to prevent this. It was said, however, in the same paper, that in some plants, fertilization does not take place between different blossoms in the same plant; if so, there may be others in which it is imperfectly performed. The paper did not tell which the plants were that required two plants to produce good seed.

If there are some plants that do not fertilize themselves, even when having perfect blossoms, or both kinds on the same plant, and others in which it is done imperfectly, it is of some practical importance to know which they are; and it should be remembered that, if one has several plants or trees of the same variety, multiplied by grafts or cuttings, it is all the same as if there were but one. It is no uncommon thing for a man to get a single apricot tree, or quince, or grape, or heart cherry, by way of experiment. It is important to know in what cases the experiment will succeed, and in what it will fail. I give some facts, and would be glad to gather as many more as I can.

1. My father had two pear trees grafted with the same variety, which blossomed regularly, but never bore.
2. Several years ago, I set out a cherry tree, said to have been brought from the Rocky Mountains, but having blossoms in racemes, like the choke-cherry, and thought by Prof. Wood to be of that species. It blossoms every year, but has no fruit.
3. I have a single Chickasaw plum, which blossoms abundantly, but does not bear.
4. Nurserymen do not recommend the heart cherry for cultivation on the prairies. Thinking they might do better if raised here, I got fifty or sixty cherries from a tree which had near it only another tree of the same variety. I put the pits under a flat stone, to keep them moist. The next spring, not finding them cracked by the frost, I cracked them and found only two or three pits in all, and those, being planted, did not grow.
5. Mentioning these facts in the presence of an intelligent gentleman, he said he knew of a chestnut orchard which bore well, while a solitary tree at some distance, had burs, but no nuts.
6. Mentioning the same facts to a friend in Vermont, he said he knew of hickory trees standing alone which bore nuts, but no "meat" in them.
7. Last fall a young man told me that in the early settlement of Indiana,

the settlers sometimes left very fine hickories. When they were grown they bore "shucks," but no "meat."

8. He told me that his father had a solitary plum tree which bore little or no fruit. A nurseryman wanted to sell him some more trees, but not unless he would take several—I understood of several varieties. He took them, and they bore well.

9. I have been repeatedly told that a single corn-stalk growing accidentally by itself seldom has any corn on it.

10. Nurserymen recommend only two or three varieties of the quince. As they give the preference to the apple or orange quince, probably few of those who cultivate have more than one kind. I have scarcely seen a quince in Kansas, and would be glad to know whether any one succeeds in raising them, and, if so, whether he has one or two varieties.

11. When I see an apricot tree, it is usually alone. I have hardly seen a tree bearing much fruit.

12. In 1878 a solitary chestnut tree in Lawrence had a few burs, but the nuts were very small.

13. The persimmon is diecious, and a pistillate tree alone should not be expected to bear fruit, but last year I was shown some fruit from such a tree growing alone. The persimmons were not half the usual size, and had no seeds. This case and some of the preceding, as of the heart cherries, chestnuts and hickories, seem analogous to the case of eggs laid by hens without any rooster.

On the other side, currants, gooseberries, the Concord grape, and perhaps many other fruits and berries, seem to do well when there is only one variety.

If this communication is deemed worthy of a reading before your Society, I hope it will draw out from the members any facts which may bear on the subject.

P. S.—It occurs to me that I have often seen pears and grapes that were deficient in seeds. Can this be owing to a similar cause with some of the above?

VOTED FRUIT LIST FOR KANSAS, FOR 1880.

Circulars were issued from this office, on January 5th, 1880, giving the voted fruit list for Kansas, as published in Vols. VII and VIII. Following the lists, these suggestions were made:

> "If any new features have developed within the past two years with reference to any of the varieties named in the lists, which make it desirable to rearrange the order of preference, please indicate the same, in a change of number; or, if any desire to substitute for any one of these in said lists, please erase the objectionable variety, and write the name of substitute on same line to the right,* and in the margin state your objections to the rejected varieties, as well as the merits of the substitute."

These circulars were sent to a large number of thoroughly practical men, prominently identified with fruit growing in Kansas from its first settlement. From their responses are compiled the tables found on pages 444 to 453, inclusive.

BEARING ORCHARDS, ETC.

Embodied in the circulars above referred to, were a series of questions relative to "Bearing Orchards," "Vineyards," "Handling Fruits," "Small Fruits," etc. These questions, with a summary of the answers received thereto, are herewith given:

BEARING ORCHARDS.

What is the character of soil most productive? First choice, upland limestone, combined with clay; second choice, black, sandy loam; third choice, black loam, with an admixture of clay. Several instances are reported of successful productiveness in orchards planted on bottom lands, near streams of water.

Subsoil preferable? First, a porous clay; second, sandy; third, gravelly. (Note.—From the foregoing, it will be seen that any subsoil which affords ample drainage is essential to success.—Sec'y.)

Presentation of location—north, east, south, or west? First, northerly; second, easterly; third, southerly.

Comparative altitude, as to the general surface of the country? First high (some say highest); second medium; third, bottom, rather than none.

General management of bearing trees—shelters? Recommendations are very largely in favor of shelters on the south and west sides.

Cultivation? Plowing every third or fourth year.

Pruning? Number in favor of pruning, fifty-one; not in favor, one. Should be done while the trees are young, so as to shape and open the heads to light and air, and remove water-sprouts and crossing and chafing limbs. Time for pruning, the latter part of winter, and early spring.

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* Blanks were left for making the changes referred to.

Manuring? Nearly an unanimous recommendation of using well-rotted manures by surface dressing.

Mulching? It is strongly recommended, the only objection being its liability to form harbors for mice, which will gnaw the bark. To avoid their work, remove the mulch from around the trees, shoving it back three or four feet from the bodies during winter.

Do you recommend growing crops of any kind in a bearing orchard, or seeding to grasses or clover? If so, what kinds? Red clover is very largely recommended. Mowing, and allowing it to fall and rot on the ground. A very few recommend orchard grass, or English blue-grass.

Have your investments in fruit-growing paid? Very largely reported in the affirmative, and the present indications are quite encouraging for the future.

Under what circumstances have orchards fruited in 1879? Only the late-blooming varieties escaped the late spring frosts; nine-tenths of the apple crop was produced by the Rawles Genet.

What varieties produced a full or fair crop in 1879? (Name in the order of quantity of fruit borne.) Of apples, 50 of the reports name the Rawles Genet as the most productive; 19, the Willow Twig; Winesap and Ben Davis, 18 each; 16, Maiden's Blush; Rambo and Northern Spy, 14 each. Peaches were almost an entire failure. Pears (in the order named), Bartlett, Duchesse d'Angouleme, Seckel, Flemish Beauty. Plums, Wild Goose and Miner.

On what kind of stock do you find cherries producing the heaviest crops? The Morello is very largely preferred to either the Mahaleb or Mazzard.

Do you observe any new features in blight of the apple or pear, and what treatment has been adopted? Very little has appeared since 1875; no new developments as to cause. As a prevention with pears, do not cultivate; sow to grass; protect the bodies from the hot sun of summer by wrapping, or otherwise; select well-drained land, and as a surface dressing, liberally apply coal ashes and salt around the trees. One reporter recommends washing the bodies of pear trees with the following compound: 3 gals. wood ashes, one-fourth lb. salt, 2 oz. sulphur, mixed with warm water to the consistency of common whitewash; apply three or four times during the season.

HANDLING FRUIT.

Picking and Handling of Winter Apples: What, from your observations and experience, is the best method of gathering and storing winter varieties of apples, with reference to — 1st. Early or late gathering? 2d. Handling, between gathering and storing? 3d. Rehandling and assorting? 4th. Periods at which particular varieties should be marketed? 5th. What varieties prove to be the best keepers? Early picking, and placing in heaps under the orchard trees, covering them with some material, as hay or straw, until endangered by freezing; then sort and place in barrels, or in shallow bins in a cool, dark and dry cellar. A very few recommend storing in pits in the ground, well lined with hay, and covered against freezing as winter approaches. Marketing as soon as ripe is strongly recommended. Best-keeping varieties of apples: Rawles Genet, 33 votes; Gilpin, 27; Willow Twig, 23; Winesap, 18; White Winter Pearmain, 8.

VINEYARDS.

What varieties have been successful? The Concord receives 50 votes; Dracut Amber, 26; Clinton, 12; Ives, 11; Delaware, 7; Martha, 6.

At what time do you cultivate? Early spring is strongly recommended. Trellis for support.

To what extent do you prune, and at what time? During warm days in February and forepart of March; to long arms and spurs.

What successful methods have you adopted to prevent rot of the fruit and rust of the leaf? Good drainage and ventilation.

Does grape culture pay? Thirty-nine report favorably, and six unfavorably.

SMALL FRUITS.

Soil preferable? First, sandy loam; second, black loam; third, light or mulatto.

Subsoil preferable? First, clay; second, porous, as sandy and gravelly.

Presentation of location — north, east, south, or west? First, northerly; second, easterly.

Comparative altitude, as to the general surface of the country? First, high to highest; second, medium.

Shelters? Are recommended as beneficial.

Cultivation? Thorough and clean cultivation, and the oftener during a drouth the better.

Manuring? Most soils of small-fruit plantations are benefited by an application of well-rotted manure.

Mulching? A very strong recommendation in favor of mulching during winter and fruiting period.

Shade? A partial shade is beneficial, and especially with currants and gooseberries.

Have your investments in small-fruit growing paid? Have generally paid a handsome profit.

Which class has been the most profitable, considering the expenses of production? (In the order named.) Blackberry, Strawberry, Raspberry, Gooseberry.

THE VOTED FRUIT LIST FOR KANSAS, FOR 1880.

SUMMER APPLES.

	Varieties receiving the largest vote, and preferred in the order named.	*C. B. Lines, Wabaunsee*	*W. W. Dickinson, Wyandotte*	*C. E. Wilcox, Wyandotte*	*W. W. Smith, Neosho Falls*	*R. D. Webster, Yates Center*	*H. A. Stiles, Wabaunsee*	*Abner Allen, Wabaunsee*	*Thos. Buckman, Topeka*	*Thos. C. Wells, Manhattan*	*N. H. Pixley, Wamego*	*W. D. Jones, Barclay*	*J. Q. Cowee, Grand Haven*	*J. G. Clark, Waveland*	*H. A. Jackson, Chanute*	*Geo. W. Ashby, Chanute*	*F. B. Harris, White City*	*John Flanagan, Paola*	*John L. Mason, New Lancaster*	*L. Bishop, Osawatomie*	*J. M. Miller, Emporia*	*Robert Milliken, Emporia*	*J. V. Randolph, Emporia*	*A. G. Wilhite, Emporia*	*Ed. Billings, Prescott*	*J. W. Latimer, Pleasanton*	*A. G. Seaman, Cadmus*	*F. Wellhouse, Fairmount*
1	**Early Harvest**	1	1	5	2	1	1	1	1	1	1	1	...	1	1	1	1	1	1	1	1	1	2	1	1	1	1	2
2	**Carolina Red June**	2	2	1	1	2	2	2	2	2	4	3	2	2	2	2	3	2	2	2	2	3	3	2	2	4	2	3
3	**Red Astrachan**	...	3	2	3	3	3	...	3	3	3	2	3	3	3	3	2	3	3	3	3	2	1	3	3	2	3	4
4	**Early Pennock**	4	...	3	4	4	4	4	4	4	2	4	4	4	4	4	...	4	4	4	4	4	4	4	...	...	...	5
5	**Am. Summer Pearmain**	5	5	4	5	5	5	5	5	5	...	5	5	5	5	5	5	5	5	5	5	5	5	5	5	...	5	...
	Scattering votes:																											
6	**Benoni**	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	**Hawley**	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	**Summer Rose**	...	...	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	**Cooper's Early White**	...	...	...	...	...	...	...	...	...	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1
10	**Hightop Sweet**	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	**Missouri Seedling**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...	...	...	...
12	**Duchess of Oldenburg**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...
13	**Summer Rose**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...
14	**Trenton Early**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	...	...
15	**Early Joe**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...
16	**Sops-of-Wine**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	**Townsend's Smil'g Beauty,**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	**Williams's Favorite**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	**Hawkins**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	**Keswick Codlin**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	**Summer Queen**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	**Red Stripe (Warder)**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	**Woodbridge**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	**Golden Sweet**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	**Alexander**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

AUTUMN APPLES.

		C. B. Lines, Wabaunsee	*W. W. Dickinson, Wyandotte*	*C. E. Wilcox, Wyandotte*	*W. W. Smith, Neosho Falls*	*R. D. Webster, Yates Center*	*H. A. Stiles, Wabaunsee*	*Abner Allen, Wabaunsee*	*Thos. Buckman, Topeka*	*Thos. C. Wells, Manhattan*	*N. H. Pixley, Wamego*	*W. D. Jones, Barclay*	*J. Q. Cowee, Grand Haven*	*J. G. Clark, Waveland*	*H. A. Jackson, Chanute*	*Geo. W. Ashby, Chanute*	*F. B. Harris, White City*	*John Flanagan, Paola*	*John L. Mason, New Lancaster*	*L. Bishop, Osawatomie*	*J. M. Miller, Emporia*	*Robert Milliken, Emporia*	*J. V. Randolph, Emporia*	*A. G. Wilhite, Emporia*	*Ed. Billings, Prescott*	*J. W. Latimer, Pleasanton*	*A. G. Seaman, Cadmus*	*F. Wellhouse, Fairmount*
1	**Maiden's Blush**	3	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1
2	**Rambo**	...	2	2	2	...	2	2	2	2	2	2	4	2	2	2	2	2	2	2	2	2	4	2	2	2	...	2
3	**Lowell**	1	3	3	3	1	...	3	3	3	3	3	3	3	3	3	3	3	...	3	3	4	2	3	3	3	3	3
4	**Fameuse**	4	...	4	4	...	4	4	4	4	4	4	...	4	4	4	5	4	4	4	4	3	3	4	4	5	4	4
5	**Fall Wine**	...	5	5	5	...	5	5	5	5	5	5	5	5	5	5	4	5	5	5	5	5	...	5	5	...	5	5
	Scattering votes:																											
6	**Cooper's Early White**	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	**Jersey Sweet**	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	**Porter**	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	**Grimes's Golden**	...	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
10	**Autumn Swaar**	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	**Ladies' Fancy**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...	...	...
12	**Hocking**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	...	...	...	...	...
13	**Wine**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...
14	**Fulton**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	**Holland Pippin**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	**Vandevere Pippin**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	**Large Yellow Bough**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	**Gramar Pearmain**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	**Ortley**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	**Keswick Codlin**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	**Belmont**	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

VOTED FRUIT LIST—CONTINUED.

SUMMER APPLES.

	J. S. Van Winkle, Pleasant Ridge	E. J. Holman, Leavenworth	J. C. Gist, Leavenworth	S. F. Rhea, Easton	J. L. Williams, Oswego	H. S. Coley, Oswego	C. G. Wickersham, Parsons	E. P. Deihl, Olathe	H. Perley, Spring Hill	Wm. Maxwell, Edgerton	J. N. Hall, Oskaloosa	Dr. C. A. Buck, Oskaloosa	W. D. Burnett, Holton	Jacob Hixon, Holton	J. W. Williams, Ogle	George Coleman, North Cedar	H. P. Welsh, Ottawa	G. C. Brackett, Lawrence	C. H. Lovejoy, Vinland	D. G. Watt, Lawrence	N. P. Deming, Lawrence	O. H. Ayer, Lawrence	John Purdee, Lawrence	Wm. Plasket, Baldwin City	Wm. Cutter, Junction City	Geo. W. Mosteller, Girard	C. C. Howe, Leroy	C. H. Graham, Leroy	Thos. W. Smith, Baxter Springs	H. E. VanDeman, Geneva	Dr. A. L. Dornbergh, Humboldt	C. C. Kelsey, Humboldt	D. W. Houston, Garnett	A. A. Adams, Garnett	Thos. F. Cook, Monrovia	S. Hatch, Wathena	A. C. Jacot, Media	Total
1	1	1	1	1	2	1	1	1	1	1	1	1	3	1	1	1	1	1	1	2	...	1	1	1	1	1	1	1	1	...	3	1	1	1	1	1	1	52
2	...	...	2	2	3	2	2	3	2	2	2	2	1	2	2	2	2	...	2	...	2	2	2	2	...	...	2	2	2	2	1	2	2	2	2	2	...	43
3	3	3	3	3	1	3	3	2	3	3	3	...	...	4	3	3	3	4	3	1	3	3	3	3	...	5	3	3	3	3	2	3	3	3	3	3	2	43
4	4	4	4	4	4	4	...	4	4	4	4	4	2	3	4	4	4	...	4	4	4	4	4	4	...	4	4	4	4	...	4	4	...	4	4	...	...	46
5	5	...	5	5	5	5	5	5	5	5	5	5	...	5	5	5	5	5	5	5	5	5	5	5	...	3	5	5	5	4	5	5	...	5	5	5	...	52
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	...	...	...	...	...	...	...	...
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AUTUMN APPLES.

1	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	...	1	1	1	1	1	1	1	1	1	1	1	1	1	2	57
2	...	3	...	2	2	2	2	2	3	3	2	2	5	1	2	2	2	4	3	2	2	2	2	3	...	2	2	2	2	5	3	3	4	2	2	2	3	42
3	3	2	3	3	3	3	3	...	4	2	...	3	2	3	3	3	3	2	2	3	3	3	3	2	5	3	3	3	3	3	2	2	2	4	3	3	1	42
4	...	...	4	4	4	4	4	4	5	4	4	4	4	4	4	4	4	3	...	4	...	4	...	4	3	...	4	4	4	...	4	4	3	3	4	4	...	43
5	5	4	5	5	5	5	5	...	...	5	5	5	3	5	5	5	5	...	5	5	5	5	5	5	...	5	5	5	5	...	5	5	...	5	5	...	4	48
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
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11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	5	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...
14	4	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	...	...

VOTED FRUIT LIST—CONTINUED.

		WINTER APPLES.																										
	Varieties receiving the largest vote, and preferred in the order named.	*C. B. Lines, Wabaunsee*	*W. W. Dickinson, Wyandotte*	*C. E. Wilcox, Wyandotte*	*W. W. Smith, Neosho Falls*	*R. D. Webster, Yates Center*	*H. A. Stiles, Pavilion*	*Abner Allen, Wabaunsee*	*Thos. Buckman, Topeka*	*Thos. C. Wells, Manhattan*	*N. H. Pixley, Wamego*	*W. D. Jones, Barclay*	*J. Q. Cowee, Grand Haven*	*J. G. Clark, Waveland*	*H. A. Jackson, Chanute*	*Geo. W. Ashby, Chanute*	*F. B. Harris, White City*	*John Flanagan, Paola*	*John L. Mason, New Lancaster*	*L. Bishop, Osawatomie*	*J. M. Miller, Emporia*	*Robt. Milliken, Emporia*	*J. V. Randolph, Emporia*	*A. G. Wilhite, Emporia*	*Ed. Billings, Prescott*	*J. W. Latimer, Pleasanton*	*A. G. Seaman, Cadmus*	*F. Wellhouse, Fairmount*
1	Winesap	2	1	3	1	1	1	1	1	1	1	1	2	2	1	1	3	1	1	1	1	3	2	1	1	3	1	1
2	Ben Davis	10	2	2	2	2	2	2	2	2	2	2	1	4	2	2	1	2	2	2	2	1	5	2	2	1	6	2
3	Jonathan	3	3	4	3	6	3	...	3	3	3	6	3	3	3	6	8	3	3	3	3	5	6	3	3	5	2	3
4	Rawles Genet	1	4	1	4	3	4	3	4	4	4	4	9	1	4	4	2	...	...	4	4	2	1	4	4	6	3	4
5	White Winter Pearmain	...	5	6	6	7	5	...	5	5	...	3	5	5	5	5	9	5	5	5	5	6	5	5	5	...	4	...
6	Missouri Pippin	...	...	5	5	4	6	7	6	6	6	5	...	6	6	3	4	6	6	6	6	7	6	6	6	2	5	6
7	Willow Twig	8	7	7	7	5	7	8	7	7	7	7	7	7	7	...	5	7	7	7	7	4	4	7	7	4	7	7
8	Rome Beauty	7	8	8	8	8	8	...	8	8	8	8	8	8	8	8	7	8	8	8	8	8	3	8	8	10	...	8
9	Gilpin	9	9	9	9	9	9	9	9	9	9	9	4	9	9	9	...	9	9	...	9	...	...	9	9	...	...	9
10	Dominie	4	10	10	10	10	...	...	10	10	10	10	10	10	10	...	10	10	10	10	10	...	...	10	10	8	10	10
	Scattering votes:																											
11	Grimes's Golden	5	...	...	...	...	10	4	...	...	5	...	6	...	...	10	...	...	...	...	...	...	...	...	...	...	...	...
12	Talman's Sweet	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	Smith's Cider	...	6	...	...	...	...	...	...	...	...	...	...	...	...	...	6	...	...	...	...	...	...	...	...	...	...	5
14	Swaar	...	...	...	...	...	...	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	McAfee's Nonsuch	...	...	...	...	...	...	8	...	...	...	...	...	...	...	...	...	...	...	...	...	9	...	...	...	...	...	...
16	Lansingburgh	...	...	...	...	...	...	10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	Limber Twig	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7	...	...	...	...	...	...	...	...	...	9	...	...
18	Putnam Russet	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...	...	...
19	Mason's Orange	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...	...
20	Lawver	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	9	...	10	9	...	...	...	...	...
21	American Pippin	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	10	...	...	...	...	...
22	Bentley's Sweet	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7	9	...
23	Esopus Spitzenberg	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8	...
24	Northern Spy	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	Minkler	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	Newtown Pippin	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	Wagener	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	Smokehouse	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	Belmont	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	Roman Stem	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
31	May	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	Baldwin	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	White Pippin	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	Stark	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
35	Wine (Pa. Redstreak)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	Fink	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
37	Yellow Bellflower	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

VOTED FRUIT LIST—CONTINUED.

	WINTER APPLES.																																					
	J. S. Van Winkle, Pleasant Ridge	E. J. Holman, Leavenworth	J. C. Gist, Leavenworth	S. F. Rhea, Leavenworth	J. L. Williams, Oswego	H. S. Obley, Oswego	C. G. Wickersham, Parsons	E. P. Deihl, Olathe	H. Perley, Spring Hill	Wm. Maxwell, Edgerton	J. N. Hall, Oskaloosa	Dr. C. A. Buck, Oskaloosa	W. D. Barnett, Holton	Jacob Hixon, Holton	J. W. Williams, Cope	Geo. Osleman, North Cedar	H. P. Welsh, Ottawa	G. C. Brackett, Lawrence	C. H. Lovejoy, Baldwin City	D. G. Watt, Lawrence	N. P. Deming, Lawrence	O. H. Ayer, Lawrence	John Pardee, Lawrence	Wm. Plasket, Baldwin City	Wm. Cutter, Junction City	Geo. W. Mosteller, Girard	C. C. Howe, Leroy	C. H. Graham, Leroy	Thos. W. Smith, Baxter Springs	H. E. Van Deman, Geneva	Dr. A. L. Dornbergh, Humboldt	C. C. Kelsey, Humboldt	D. W. Houston, Garnett	A. A. Adams, Garnett	Thos. F. Cook, Monrovia	S. Hatch, Wathena	A. C. Jacot, Media	Total
1	1	6	1	1	1	1	1	3	2	1	3	1	1	1	1	1	1	1	1	1	1	1	6	3	3	5	1	1	1	1	1	1	...	1	3	1	4	45
2	2	1	2	2	2	2	2	2	3	6	2	3	2	2	2	2	2	2	2	2	2	2	2	1	1	1	2	4	2	2	2	2	1	2	1	2	1	45
3	3	5	3	3	3	3	3	4	1	4	1	4	5	3	3	3	3	4	3	3	...	3	3	4	5	3	3	3	3	3	3	5	2	3	2	3	5	39
4	4	2	4	4	4	8	4	1	6	3	4	2	3	8	4	4	4	3	6	4	6	4	5	7	4	2	4	2	4	6	4	4	3	4	4	4	3	31
5	5	...	5	5	7	5	5	...	...	...	5	5	9	10	5	5	5	10	...	8	5	...	...	...	...	8	5	5	5	...	10	7	7	5	5	6	...	30
6	6	7	6	6	6	6	6	5	8	2	6	10	8	6	6	6	6	7	4	7	4	6	1	2	2	7	6	6	6	4	5	6	6	6	6	5	7	33
7	7	3	7	7	5	7	7	...	4	7	...	6	6	7	7	7	7	5	7	6	7	7	7	6	7	4	7	7	7	7	6	3	4	7	7	7	2	40
8	8	4	8	...	8	4	8	6	9	...	8	7	7	4	8	8	8	6	8	5	8	8	8	5	8	6	8	8	8	8	7	8	8	8	8	8	8	42
9	...	9	9	...	9	9	9	...	...	9	9	8	10	9	9	9	9	8	9	9	...	9	9	8	...	...	9	9	9	...	8	9	9	9	9	9	9	43
10	...	10	10	10	10	10	10	9	10	10	10	9	4	5	10	10	10	9	...	10	10	10	10	...	...	10	10	10	10	...	9	10	10	10	10	10	6	44
11	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8	...	...	10	9	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	5	...	...	...	...	...	...	...	...	...	10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	5	...	...	...	...	...	...	...	...	5	...	...	...	...	...	6	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	9	...	...	8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	10	...	...	...	...	...	...	...	...
18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
19	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	9	...	...	...	...	...	...	...	...
23	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	...	8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	...	...	...	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	...	...	...	...	...	...	...	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	...	...	...	...	...	...	...	8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	...	...	...	...	...	...	...	10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
30	...	...	...	...	...	...	...	...	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	...	...	...	...	...
31	...	...	...	...	...	...	...	...	...	8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
32	...	...	...	...	...	...	...	...	...	...	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
33	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
34	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...	5	...	...	...	...	...	...	...	...
35	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...
36	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	10	...	...	...	...	...	...	...	...	...	...	...	...	...
37	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	9	...	...	...	...	...	...	...	...	...	...	...	...

VOTED FRUIT LIST—CONTINUED.

	Varieties receiving the largest vote, and preferred in the order named.	PEACHES.																										
		C. B. Lines, Wabaunsee	*W. W. Dickinson, Wyandotte*	*C. E. Wilcox, Wyandotte*	*W. W. Smith, Neosho Falls*	*R. D. Webster, Yates Center*	*H. A. Stiles, Pavilion*	*Abner Allen, Wabaunsee*	*Thos. Buckman, Topeka*	*T. C. Wells, Manhattan*	*N. H. Pixley, Wamego*	*W. D. Jones, Barclay*	*J. Q. Cowee, Grand Haven*	*J. G. Clark, Waveland*	*H. A. Jackson, Chanute*	*G. W. Ashby, Chanute*	*F. B. Harris, White City*	*John Flanagan, Paola*	*John L. Mason, New Lancaster*	*L. Bishop, Osawatomie*	*J. M. Miller, Emporia*	*Robert Milliken, Emporia*	*J. V. Randolph, Emporia*	*A. G. Wilhite, Emporia*	*Ed. Billings, Prescott*	*J. W. Latimer, Pleasanton*	*A. G. Seaman, Cadmus*	*F. Wellhouse, Fairmount*
1	Crawford's Early	8	1	2	1	1	1	1	1	1	2	...	1	1	2	1	2	1	1	,	1	1	1	1	1	1	...	1
2	Hale's Early	7	2	3	2	3	2	2	2	2	1	1	2	2	1	2	1	2	2	2	2	2	2	2	2	...	2	...
3	Crawford's Late	3	3	4	3	2	3	3	3	3	3	4	3	3	3	3	3	3	3	3	3	3	3	3	3	...	8	3
4	Heath Cling	...	4	5	4	4	4	4	4	4	4	5	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
5	Large Early York	4	5	6	5	...	5	5	5	5	5	3	5	5	5	5	6	5	5	...	5	5	5	5	5	...	5	5
6	Stump-the-World	6	6	7	6	...	6	6	6	6	6	6	6	6	6	6	5	6	6	6	6	6	6	6	6	6	6	6
7	Amsden's June	2	7	8	7	...	7	7	7	7	7	7	7	7	7	7	8	7	7	7	7	...	7	7	...	...	7	7
8	Old Mixon Free	1	8	9	8	...	8	8	8	8	8	8	8	8	8	8	7	8	8	8	8	8	8	8	8	8	...	8
	Scattering votes:																											
9	Alexander	5	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	7	...	...	...	2	3	2
10	Wyandotte Chief	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	Red Cheek Melocoton	...	...	...	...	...	...	9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	La Grange	...	...	...	...	...	...	10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	Early York (ser.)	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	...	...	...	...	...	...	...	...
14	Ednon's Early	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7	...	...	...
15	Smock	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...
16	Red Rareripe	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	...	...
17	Lemon Cling	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7	...	...
18	Brice's Early	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...
19	Old Mixon Cling	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
20	Early Louise	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
21	Ward's Late Free	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
22	Mountain Rose	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
23	Bilyou's Late October	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
24	Early Beatrice	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
25	Heath Free	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
26	Coolidge's Favorite	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
27	Troth's Early	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
28	Late Admirable	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
29	Red Indian Cling	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	PEARS.																											
1	Bartlett	...	1	1	1	No trees bearing.	1	1	1	1	1	Not sufficiently tried.	1	1	1	1	1	1	A failure.	1	1	Do not cultivate.	2	1	1	1	1	1
2	Flemish Beauty	...	2	2	2		2	2	2	2	2		2	2	2	2	...	2		2	2		1	2	2	2	2	2
3	Duchesse d'Angouleme	...	3	3	3		3	3	3	3	3		3	3	3	3	2	3		3	3		3	3	3	3	...	3
4	Seckel	6	4	4	4		4	4	4	4	4		4	4	4	4	...	4		4	4		5	4	4	4	4	4
5	Louise Bonne de Jersey	...	5	5	5		5	5	5	5	5		5	5	5	5	...	5		5	5		6	5	5	5	5	5
6	Vicar of Winkfield	7	6	6	6		6	6	6	6	6		6	6	6	6	3	6		6	6		9	6	6	6	6	6
7	Buffum	9	7	7	7		7	7	7	7	7		7	7	7	7	...	7		7	7		7	7	7	7	7	7
8	White Doyenne	1	8	8	8		8	8	8	8	8		8	8	8	8	...	8		8	8		8	8	8	...	8	8
9	Howell	8	9	9	9		9	9	9	9	9		9	9	9	9	...	9		9	9		4	9	9	9	9	9
	Scattering votes:																											
10	Urbaniste	2	...	...	...		...	...	...	...	...		...	...	...	...	...	...		...	...		...	...	...	...	...	...
11	Winter Nelis	3	...	..	...		...	...	...	...	...		...	...	...	...	...	...		...	...		...	...	...	...	...	...
12	Lawrence	4	...	...	...		...	...	...	...	...		...	...	...	...	...	...		...	...		...	...	...	...	...	...
13	Buerre Diel	5	...	...	...		...	...	...	...	...		...	...	...	...	...	...		...	...		...	...	..	...	...	...
14	Clapp's Favorite	...	...	...	...		...	...	...	...	...		...	...	...	...	...	...		...	...		...	...	...	8	3	...
15	Buerre d'Anjou	...	...	...	...		...	...	...	...	...		...	...	...	...	...	...		...	...		...	...	...	...	...	...
16	Petite Marguerite	...	...	...	...		...	...	...	...	...		...	...	...	...	...	...		...	...		...	...	...	...	...	...
17	Bonne du Puits Ansault	...	...	...	...		...	...	...	...	...		...	...	...	...	...	...		...	...		...	...	...	...	...	...
18	Buerre Hardy	...	...	...	...		...	...	...	...	...		...	...	...	...	...	...		...	...		...	...	...	...	...	...
19	Sheldon	...	...	...	...		...	...	...	...	...		...	...	...	...	...	...		...	...		...	...	...	...	...	...
20	Rosteizer	...	...	...	...		...	...	...	...	...		...	...	...	...	...	...		...	...		...	...	...	...	...	...
21	Buerre Clairgou	...	...	...	...		...	...	...	...	...		...	...	...	...	...	...		...	...		...	...	...	...	...	...
22	Glout Morceau	...	...	...	...		...	...	...	...	...		...	...	...	...	...	...		...	...		...	...	...	...	...	...

VOTED FRUIT LIST—CONTINUED.

PEACHES.

	J. S. Van Winkle, Pleasant Ridge	E. J. Holman, Leavenworth	J. C. Gist, Leavenworth	S. F. Rhea, Easton	J. L. Williams, Oswego	H. S. Coley, Oswego	C. G. Wickersham, Parsons	E. P. Deihl, Olathe	H. Perley, Spring Hill	Wm. Maxwell, Edgerton	J. N. Hall, Oskaloosa	Dr. C. A. Buck, Oskaloosa	W. D. Burnett, Holton	Jacob Hixom, Holton	J. W. Williams, Cope	George Coleman, North Cedar	H. P. Welsh, Ottawa	G. C. Brackett, Lawrence	C. H. Lovejoy, Vinland	D. G. Watt, Lawrence	N. P. Deming, Lawrence	O. H. Ayer, Lawrence	John Pardee, Lawrence	Wm. Plasket, Baldwin City	Wm. Cutter, Junction City	G. W. Mosteller, Girard	C. C. Howe, Leroy	C. H. Graham, Leroy	Thos. W. Smith, Baxter Springs	H. E. VanDeman, Geneva	Dr. A. L. Dornbergh, Humboldt	C. C. Kelsey, Humboldt	A. A. Adams, Garnett	D. W. Houston, Garnett	Thos. F. Cook, Monrovia	S. Hatch, Wathena	A. C. Jacot, Media	Total
1	1	...	1	No report.	1	1	...	2	1	1	1	1	1	1	1	1	1	3	1	1	1	1	4	1	...	6	1	1	1	...	7	6	1	Not sufficiently tried.	1	1	1	45
2	...	3	2		2	2	2	...	2	2	2	2	2	2	2	2	2	4	2	2	2	2	...	2	3	2	2	2	2	5	2	1	2		2	2	2	45
3	3	...	3		3	3	7	3	3	3	3	3	3	3	3	3	3	7	3	3	3	3	5	3	...	3	3	3	3	4	6	5	3		3	3	3	50
4	4	8	4		...	4	...	4	4	4	4	4	4	4	4	4	4	8	4	4	4	4	6	4	4	4	4	4	4	7	5	3	4		4	4	4	49
5	5	5	5		5	5	4	5	5	5	5	5	5	5	5	5	5	6	5	5	8	5	...	5	...	5	5	5	5	3	3	7	5		5	5	5	51
6	6	6	6		6	6	...	6	6	6	6	6	6	6	6	6	6	5	6	6	6	6	1	6	...	1	6	6	6	6	8	8	6		6	6	6	51
7	7	2	7		7	7	...	1	7	7	7	7	7	7	7	7	...	1	7	7	7	7	...	7	2	...	7	7	7	...	1	2	7		7	7	7	44
8	8	...	8		8	8	6	8	8	8	8	8	8	8	8	8	7	...	8	8	5	8	8	8	6	...	8	8	8	1	4	4	8		8	8	8	47
9	...	1	...		...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	1	7	...	...	...	2	...	...	...		...	...	...	...
10	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...
11	...	...	...		...	...	5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...
12	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...
13	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7	...	...	...	...	...	...	...	...		...	...	...	...
14	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...
15	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...
16	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...
17	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...
18	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...
19	2	...	...		4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...
20	...	4	...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...
21	...	7	...		...	...	...	...	...	...	...	...	...	...	...	...	...	8	...	...	...	...	...	...	5	...	...	...	...	...	...	...	...		...	...	...	...
22	...	...	...		...	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...
23	...	...	...		...	...	8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...
24	...	...	...		...	...	...	7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...
25	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...		...	...	...	...
26	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	7	...	...	...	...	...	...	...	...	...	...		...	...	...	...
27	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8	...	...	...	...	...	...	...	...		...	...	...	...
28	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8	...	...	...	...	...	...	...		...	...	...	...
29	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	8	...	...	...		...	...	...	...

PEARS.

1	A failure.	1	1	1	1	1	1	1	No report.	1	1	1	1	1	1	1	1	2	1	A failure.	1	1	1	1	4	1	Poor success.	1	1	1	1	1	1	No report.	1	1	3	50
2		...	2	2	2	2	2	2		2	2	5	2	2	2	2	2	8	2		2	2	2	2	1	3		2	2	2	5	5	2		2	6	...	43
3		2	3	3	3	3	3	3		3	3	6	3	3	3	3	3	9	3		3	3	3	3	...	2		3	3	3	3	2	3		3	2	6	44
4		3	4	4	...	4	4	4		4	4	2	4	4	4	4	4	3	4		4	4	4	4	3	6		4	4	5	6	6	4		4	3	7	41
5		7	5	5	5	5	...	5		5	5	7	5	5	5	5	5	5	8		5	5	5	5	...	5		5	5	4	4	3	5		5	7	2	42
6		5	6	6	6	6	...	6		6	6	8	6	6	6	6	6	6	6		6	6	9	6	...	4		6	6	8	2	4	6		6	8	4	41
7		...	7	7	7	7	...	7		7	7	3	7	7	7	7	7	...	...		7	7	7	...	...	7		7	7	6	7	7	7		7	5	...	43
8		6	8	8	8	8	...	8		8	8	4	8	8	8	8	8	1	9		8	8	...	8	...	8		8	8	...	8	8	8		8	4	5	42
9		...	9	9	9	9	...	9		9	9	9	9	9	9	9	9	4	5		9	9	6	9	...	9		9	9	7	9	9	9		9	9	...	44
10		...	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...		...	...	...	...	...	...		...	...	...	...
11		...	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...		...	...	...	...	...	...		...	...	...	...
12		...	...	...	...	...	9	...		...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...		...	...	...	...	...	...		...	...	...	...
13		...	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...		...	...	...	...	...	...		...	...	...	...
14		...	...	...	4	...	...	...		...	...	...	...	...	...	...	...	...	...		...	...	...	...	2	...		...	...	9	...	...	...		...	...	...	...
15		4	...	...	...	...	7	...		...	...	...	...	...	...	...	...	7	...		...	...	8	...	...	...		...	...	...	...	...	...		...	...	...	...
16		...	...	...	...	...	5	...		...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...		...	...	...	...	...	...		...	...	...	...
17		...	...	...	...	...	6	...		...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...		...	...	...	...	...	...		...	...	...	...
18		...	...	...	...	...	8	...		...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...		...	...	...	...	...	...		...	...	...	...
19		...	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	7		...	...	...	7	...	...		...	...	...	...	...	...		...	...	...	...
20		...	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...		...	...	...	...	5	...		...	...	...	...	...	...		...	...	...	...
21		...	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...		...	...	...	...	...	...		...	...	8	...
22		...	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...		...	...	...	...	...	...		...	...	1	...

VOTED FRUIT LIST—CONTINUED.

		PLUMS.																											
	Varieties receiving the largest vote, and preferred in the order named.	*C. B. Lines, Wabaunsee*	*W. W. Dickinson, Wyandotte*	*C. E. Wilcox, Wyandotte*	*W. W. Smith, Neosho Falls*	*R. D. Webster, Yates Center*	*H. A. Stiles, Pavilion*	*Abner Allen, Wabaunsee*	*Thos. Buckman, Topeka*	*Thos. C. Wells, Manhattan*	*N. H. Pixley, Wamego*	*W. D. Jones, Barclay*	*J. Q. Cowee, Grand Haven*	*J. G. Clark, Waveland*	*H. A. Jackson, Chanute*	*Geo. W. Ashby, Chanute*	*F. B. Harris, White City*	*John Flanagan, Paola*	*John L. Mason, New Lancaster*	*L. Bishop, Osawatomie*	*J. M. Miller, Emporia*	*Robt. Milliken, Emporia*	*J. V. Randolph, Emporia*	*A. G. Wilhite, Emporia*	*Ed. Billings, Prescott*	*J. W. Latimer, Pleasanton*	*A. G. Seaman, Cadmus*	*F. Wellhouse, Fairmount*	*J. S. Van Winkle, Pleasant Ridge*
1	Wild Goose	1	1	1	1	No report.	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	No report.	1	1	1	1	1	1	No report.
2	Miner	...	2	...	2		2	2	2	2	2	2	2	2	3	...	4	2	2	2	2		2	2	2	2	2	2	
3	Chickasaw	...	3	...	3		3	3	3	3	3	...	3	3	2	2	5	3	3	3	3		3	3	3	3	3	3	
4	Damson	...	4	...	4		4	4	4	4	4	...	4	4	...	...	3	4	4	4	4		4	4	4	...	4	4	
5	Lombard	...	5	...	5		5	5	5	5	5	...	5	5	...	...	2	5	5	5	5		5	5	5	...	5	5	
6	Sand	...	6	...	6		...	6	6	6	6	...	6	6	...	...	...	6	6	6	6		6	6	6	4	6	6	
	Scattering votes:																												
7	Native varieties	2	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...	
8	Green Gage	...	...	...	...		...	...	...	...	...	...	...	...	...	...	6	...	...	...	...		...	...	...	...	...	...	
9	Shropshire Damson	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...	
10	Bavay's Green Gage	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...	
11	Gen. Hand	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...	
12	Bryanstone Gage	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...	
13	Yellow Egg	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...	
14	Coe's Golden Drop	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...	
15	Emigrant	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...	
	CHERRIES.																												
1	Early Richmond	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	Common Morello	...	2	4	2	2	2	2	2	2	2	2	2	2	3	3	2	2	2	2	2	2	2	2	2	2	3	2	2
3	English Morello	...	3	2	3	...	3	3	3	3	3	3	3	3	2	2	3	3	3	3	3	3	3	3	3	3	2	3	3
4	May Duke	...	4	5	4	...	4	4	4	4	4	4	4	4	4	4	4	4	4	...	4	4	4	4	4	4	6	4	4
5	Gov. Wood	...	5	6	5	...	5	5	5	5	5	...	5	5	5	5	5	5	5	5	5	5	5	5	5	...	4	5	5
6	Belle Magnifique	...	6	3	6	...	6	6	6	6	6	...	6	6	6	6	6	6	6	6	6	6	6	6	6	5	5	6	6
	Scattering votes:																												
7	Leib	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...	...
8	Reine Hortense	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	Yellow Spanish	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	Montmo'ncy Ordinaire	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	Royal Duke	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	Late Duke	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	GRAPES.																												
1	Concord	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	Ives	...	2	...	2	2	3	...	2	2	2	3	2	2	2	2	4	2	2	2	2	2	2	2	2	2	2	2	2
3	Dracut Amber	3	3	...	3	3	...	3	3	3	3	2	3	...	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4	Clinton	4	4	...	4	4	...	4	4	...	4	4	4	...	4	...	2	4	4	...	4	...	...	...	4	4	4	4	4
	Scattering votes:																												
5	Catawba	2	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	Hartford Prolific	...	...	2	...	...	4	...	...	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	Goethe	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	Wilder	...	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	Lady	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	Champion	...	...	...	...	...	5	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...	...
11	Martha	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	Delaware	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...
13	Salem	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...
14	Iona	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...
15	Elvira	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	Merrimack	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	Creveling	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

VOTED FRUIT LIST—CONTINUED.

PLUMS.

	E. J. Holman, Leavenworth	J. C. Gist, Leavenworth	S. F. Rhea, Leavenworth	J. L. Williams, Oswego	H. S. Coley, Oswego	C. G. Wickersham, Parsons	E. P. Deihl, Olathe	H. Perley, Spring Hill	Wm. Maxwell, Edgerton	J. N. Hall, Oskaloosa	Dr. C. A. Buck, Oskaloosa	W. D. Barnett, Holton	Jacob Hixon, Holton	J. W. Williams, Cope	Geo. Coleman, North Cedar	H. P. Welsh, Ottawa	G. C. Brackett, Lawrence	C. H. Lovejoy, Vinland	D. G. Watt, Lawrence	N. P. Deming, Lawrence	O. H. Ayer, Lawrence	John Pardee, Lawrence	Wm. Plaskett, Baldwin City	Wm. Cutter, Junction City	G. W. Mosteller, Girard	C. C. Howe, Leroy	C. H. Graham, Leroy	Thos. W. Smith, Baxter Springs	H. E. Van Deman, Geneva	Dr. A. L. Dornbergh, Humboldt	C. C. Kelsey, Humboldt	A. A. Adams, Garnett	D. W. Houston, Garnett	Thos. F. Cook, Monrovia	S. Hatch, Wathena	A. C. Jacot, Medic	Total
1	1	1	Not tried.	1	1	...	1	Not sufficiently tried.	1	1	1	1	1	1	1	1	1	1	No report.	1	1	1	1	...	1	1	1	1	1	1	1	1	Not sufficiently tried.	1	1	...	54
2	...	2		2	2	...	2		2	2	2	2	2	2	2	2	...	2		2	2	...	2	1	...	...	2	2	2	4	5	2		2	2	...	42
3	...	3		3	3	...	3		3	3	3	3	3	3	3	3	3	3		3	3	...	3	...	...	...	3	3	...	2	6	3		3	3	...	41
4	...	4		5	4	...	...		...	4	4	4	4	4	4	4	4	4		4	4	...	4	...	...	...	4	4	...	5	3	4		4	4	...	37
5	2	5		6	5	1	...		...	5	5	5	5	5	5	5	5	5		5	5	...	5	3	...	...	5	5	...	6	4	5		5	5	...	37
6	...	6		4	6	...	...		4	6	6	6	6	6	6	6	...	6		6	6	...	6	4	...	...	6	6	3	3	2	6		6	6	...	35
7	...	...		...	...	...	...		...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...
8	3	...		...	...	...	...		...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...
9	...	...		...	...	2	...		...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...
10	...	...		...	...	3	...		...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...
11	....	...		...	...	4	...		...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...
12	...	...		...	...	5	...		...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...
13	...	...		...	...	6	...		...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...
14	...	...		...	...	...	...		...	...	...	...	...	...	...	...	2	...		...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...
15	...	...		...	...	...	...		...	...	...	...	...	...	...	...	...	...		...	...	...	...	2	...	...	...	...	...	...	...	...		...	...	...	...

CHERRIES.

	E. J. Holman, Leavenworth	J. C. Gist, Leavenworth	S. F. Rhea, Leavenworth	J. L. Williams, Oswego	H. S. Coley, Oswego	C. G. Wickersham, Parsons	E. P. Deihl, Olathe	H. Perley, Spring Hill	Wm. Maxwell, Edgerton	J. N. Hall, Oskaloosa	Dr. C. A. Buck, Oskaloosa	W. D. Barnett, Holton	Jacob Hixon, Holton	J. W. Williams, Cope	Geo. Coleman, North Cedar	H. P. Welsh, Ottawa	G. C. Brackett, Lawrence	C. H. Lovejoy, Vinland	D. G. Watt, Lawrence	N. P. Deming, Lawrence	O. H. Ayer, Lawrence	John Pardee, Lawrence	Wm. Plaskett, Baldwin City	Wm. Cutter, Junction City	G. W. Mosteller, Girard	C. C. Howe, Leroy	C. H. Graham, Leroy	Thos. W. Smith, Baxter Springs	H. E. Van Deman, Geneva	Dr. A. L. Dornbergh, Humboldt	C. C. Kelsey, Humboldt	A. A. Adams, Garnett	D. W. Houston, Garnett	Thos. F. Cook, Monrovia	S. Hatch, Wathena	A. C. Jacot, Medic	Total
1	1	1	1	1	1	5	1	1	1	1	1	2	1	1	1	1	1	1	2	1	1	1	1	1	1	No report.	1	1	1	1	1	1	1	1	1	1	60
2	...	...	2	2	2	...	2	2	2	2	...	3	2	2	2	2	6	2	...	2	2	2	2	2	4		2	2	2	2	4	...	4	2	2	2	46
3	2	3	...	3	3	4	3	3	3	3	...	1	3	3	3	3	4	3	1	3	3	3	3	3	3		3	3	3	3	2	2	3	3	3	3	47
4	3	4	3	4	4	3	4	4	4	4	...	4	4	4	4	4	5	4	...	4	4	...	4	4	5		4	4	...	4	3	4	...	4	4	4	47
5	...	5	...	6	5	...	...	5	5	5	...	5	5	5	5	5	...	5	...	5	5	...	5	5	6		5	5	...	5	5	5	5	5	5	5	46
6	...	6	...	5	6	6	...	6	6	6	...	6	6	6	6	6	2	6	...	6	6	...	6	6	2		6	6	5	6	6	6	6	6	6	6	47
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...
8	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...	...		...	...	4	...	...	...	2	...	...	...	...
9	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...
11	..	...	..	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	3	...	...	...	...	...

GRAPES.

	E. J. Holman, Leavenworth	J. C. Gist, Leavenworth	S. F. Rhea, Leavenworth	J. L. Williams, Oswego	H. S. Coley, Oswego	C. G. Wickersham, Parsons	E. P. Deihl, Olathe	H. Perley, Spring Hill	Wm. Maxwell, Edgerton	J. N. Hall, Oskaloosa	Dr. C. A. Buck, Oskaloosa	W. D. Barnett, Holton	Jacob Hixon, Holton	J. W. Williams, Cope	Geo. Coleman, North Cedar	H. P. Welsh, Ottawa	G. C. Brackett, Lawrence	C. H. Lovejoy, Vinland	D. G. Watt, Lawrence	N. P. Deming, Lawrence	O. H. Ayer, Lawrence	John Pardee, Lawrence	Wm. Plaskett, Baldwin City	Wm. Cutter, Junction City	G. W. Mosteller, Girard	C. C. Howe, Leroy	C. H. Graham, Leroy	Thos. W. Smith, Baxter Springs	H. E. Van Deman, Geneva	Dr. A. L. Dornbergh, Humboldt	C. C. Kelsey, Humboldt	A. A. Adams, Garnett	D. W. Houston, Garnett	Thos. F. Cook, Monrovia	S. Hatch, Wathena	A. C. Jacot, Medic	Total
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	63
2	2	2	...	4	2	2	...	2	2	2	...	2	2	2	2	2	..	2	2	2	3	2	2	2	3	2	2	2	2	3	2	2	2	2	2	2	50
3	3	3	...	2	3	3	...	3	3	3	...	3	3	3	3	3	3	3	3	3	...	3	3	3	2	3	3	3	4	2	3	3	3	3	3	3	52
4	...	4	...	3	4	4	...	4	4	4	...	4	...	4	4	4	4	...	4	...	...	...	4	4	4	...	4	4	3	4	4	...	4	4	4	4	43
5	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	4	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	3	...	...	...	...	...	4	...	...	...	...	...	...	4	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	3	...	...	.	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...

VOTED FRUIT LIST—CONTINUED.

		STRAWBERRIES.															
	Varieties receiving the largest vote, and preferred in the order named.	*W. W. Dickinson, Wyandotte.*	*C. E. Wilcox, Wyandotte*	*W. W. Smith, Neosho Falls*	*R. D. Webster, Yates Center*	*H. A. Stiles, Pavilion*	*Abner Allen, Wabaunsee*	*Thos. Buckman, Topeka*	*Thos. C. Wells, Manhattan*	*N. H. Pixley, Wamego*	*W. D. Jones, Barclay*	*J. Q. Cowee, Grand Haven*	*J. G. Clark, Waveland*	*G. W. Ashby, Chanute*	*F. B. Harris, White City*	*J. L. Mason, New Lancaster.*	*L. Bishop, Osawatomie*
1	Wilson's Albany	2	......	1	1	1	1	1	2	1	2	1	1	3	1	1	......
2	Chas. Downing	1	1	......	2	2	2	2	3	2	1	......	2	2	3	2	2
3	Green Prolific	3	3	3	3	3	3	3	4	3	3	......	3	......	......	3	3
4	Kentucky (late)	4	......	2	4	4	4	4	5	4	......	......	4	......	2	4	4
5	Col. Cheney	......	......	4	5	5	5	5	......	5	......	......	5	......	......	5	5
	Scattering votes:																
6	Capt. Jack	5	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
7	Downer's Prolific	......	2	......	......	......	......	......	......	......	......	......	......	......	......	......	......
8	Cumberland Triumph	......	4	......	......	......	......	......	......	......	......	......	......	4	......	......	......
9	Crescent Seedling	......	5	......	......	......	......	......	......	......	......	......	......	......	......	......	......
10	Hovey's Seedling	......	......	......	......	......	......	......	1	......	......	......	......	......	......	......	......
11	Dr. Warder	......	......	......	......	......	......	......	......	......	......	......	......	1	......	......	......
12	Champion	......	......	......	......	......	......	......	......	......	......	......	......	5	......	......	......
13	Longworth's Prolific	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	1
14	Monarch of the West	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
15	Sharpless	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
16	Austin	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
17	Seth Boyden	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
	BLACKBERRIES.																
1	Kittatinny	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	Lawton	2	2	2	2	2	2	2	......	2	......	......	2	2	2	......	2
	Scattering votes:																
3	Snyder	......	3	......	......	......	......	......	2	......	2	......	3	......	......	......	......
4	Dorchester	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
	RASPBERRIES.																
1	Doolittle (early)	2	1	......	1	......	......	1	1	1	1	......	1	1	1	1	1
2	Miami (med.)	3	2	1	2	2	2	2	......	2	2	1	2	2	......	2	2
3	McCormick (late)	1	3	2	3	1	3	3	2	3	3	......	3	3	......	3	3
4	Philadelphia (red)	......	4	3	4	3	......	4	......	4	......	......	4	......	......	4	4
	Scattering votes:																
5	Turner	4	......	......	......	......	......	......	4	......	4	......	......	4	......	......	......
6	Thwack	......	5	......	......	......	......	......	......	......	......	......	......	......	......	......	......
7	Turner	......	6	......	......	......	......	......	......	......	......	......	......	......	......	......	......
8	Ganargua	......	......	......	......	......	1	......	......	......	......	......	......	......	......	......	......
9	Miller's Daily	......	......	......	......	......	4	......	......	......	......	......	......	......	......	......	......
10	Native variety	......	......	......	......	......	......	......	......	......	......	......	......	......	2	......	......
11	Gregg	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
12	Brandywine	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
13	Clark	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
14	Cuthbert	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
15	Smith's	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......	......
	GOOSEBERRIES.																
1	Houghton	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	Pale Red	2	2	2	2	2	2	2	2	2	2	......	2	3	......	......	2
3	Downing	3	3	3	3	3	3	3	3	3	3	......	3	2	......	......	3
4	Mountain	4	4	4	4	4	4	4	4	4	4	......	4	......	......	......	4
	CURRANTS.																
1	Large Red Dutch	1	1	1	1	1	1	1	1	1	No success.	1	1	1	No experience.	No success.	1
2	White Grape	2	2	2	2	2	2	2	2	2		2	2	2			2
3	White Dutch	3	3	3	3	3	3	3	3	3		3	3	3			3
4	Black Naples	4	4	4	4	4	4	4	4	4		4	4	4			4
	Scattering votes:																
5	Cherry	......	......	......	......	......	......	......	......	......		......	......	......			......
6	La Versailles	......	......	......	......	......	......	......	......	......		......	......	......			......
7	London Red	......	......	......	......	......	......	......	......	......		......	......	......			......
8	Victoria	......	......	......	......	......	......	......	......	......		......	......	......			......

VOTED FRUIT LIST—CONCLUDED.

STRAWBERRIES.

	Robt. Milliken, Emporia	J. V. Randolph, Emporia	A. G. Wilhite, Emporia	Ed. Billings, Prescott	J. W. Latimer, Pleasanton	A. G. Seaman, Cadmus	J. S. Van Winkle, Pleas. Ridge	E. J. Holman, Leavenworth	J. C. Gist, Leavenworth	J. L. Williams, Oswego	H. S. Ooley, Oswego	C. G. Wickersham, Parsons	E. P. Deihl, Olathe	H. Perley, Spring Hill	Wm. Maxwell, Edgerton	W. D. Barnett, Holton	Jacob Hixon, Holton	J. W. Williams, Cope	H. P. Welsh, Ottawa	G. C. Brackett, Lawrence	C. H. Lovejoy, Vinland	D. G. Watt, Lawrence	Omar H. Ayer, Lawrence	John Pardee, Lawrence	Wm. Cutter, Junction City	G. W. Mosteller, Girard	C. H. Graham, Leroy	Thos. W. Smith, Bax. Spr'gs	H. E. Van Deman, Geneva	A. L. Dornbergh, Humboldt	C. C. Kelsey, Humboldt	D. W. Houston, Garnett	W. G. Evens, Pleasanton	Thos. F. Cook, Monrovia	S. Hatch, Wathena	A. C. Jacot, Media	Total
1	1	1	1	1	1	1	No report.	...	1	2	1	1	1	1	1	1	1	1	...	1	No report.	1	1	2	2	1	1	1	1	1	1	1	1	1	...	...	37
2	2	2	2	2	...	2		1	2	1	2	2	2	2	2	2	2	2	2	...		2	2	1	1	2	2	2	3	2	2	2	...	2	...	...	33
3	...	3	...	3	3	3		...	3	4	3	3	3	3	...	3	3	3	3	4		3	3	...	...	3	3	3	...	3	3	3	3	3	...	...	35
4	3	4	4	4	2	4		...	4	3	4	4	...	4	4	4	4	4	4	3		4	4	...	...	4	4	4	5	4	4	4	4	4	...	...	32
5	5	5	5	5	...	5		...	5	...	5	5	...	5	5	5	5	5	...	...		5	5	...	...	5	5	5	4	5	5	5	...	5	...	...	30
6	4	...	8	...	...	...		3	...	...	...	...	...	...	...	...	...	...	...	5		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...		2	...	...	...	...	...	...	3	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...		5	...	...	...	...	...	...	...	...	...	...	1	...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...		4	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...	5	...		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
16	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	2		...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
17	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...	...	...		...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...

BLACKBERRIES.

	Robt. Milliken, Emporia	J. V. Randolph, Emporia	A. G. Wilhite, Emporia	Ed. Billings, Prescott	J. W. Latimer, Pleasanton	A. G. Seaman, Cadmus	J. S. Van Winkle, Pleas. Ridge	E. J. Holman, Leavenworth	J. C. Gist, Leavenworth	J. L. Williams, Oswego	H. S. Ooley, Oswego	C. G. Wickersham, Parsons	E. P. Deihl, Olathe	H. Perley, Spring Hill	Wm. Maxwell, Edgerton	W. D. Barnett, Holton	Jacob Hixon, Holton	J. W. Williams, Cope	H. P. Welsh, Ottawa	G. C. Brackett, Lawrence	C. H. Lovejoy, Vinland	D. G. Watt, Lawrence	Omar H. Ayer, Lawrence	John Pardee, Lawrence	Wm. Cutter, Junction City	G. W. Mosteller, Girard	C. H. Graham, Leroy	Thos. W. Smith, Bax. Spr'gs	H. E. Van Deman, Geneva	A. L. Dornbergh, Humboldt	C. C. Kelsey, Humboldt	D. W. Houston, Garnett	W. G. Evens, Pleasanton	Thos. F. Cook, Monrovia	S. Hatch, Wathena	A. C. Jacot, Media	Total
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	...	...	50
2	...	2	2	2	...	2	2	...	2	2	2	2	2	...	2	2	2	2	...	2	2	2	2	...	2	...	2	2	2	2	2	2	...	2	...	...	38
3	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	2	...	2	...	...	3	...	...	...	...	...	...	...	...
4	...	...	...	...	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

RASPBERRIES.

	Robt. Milliken, Emporia	J. V. Randolph, Emporia	A. G. Wilhite, Emporia	Ed. Billings, Prescott	J. W. Latimer, Pleasanton	A. G. Seaman, Cadmus	J. S. Van Winkle, Pleas. Ridge	E. J. Holman, Leavenworth	J. C. Gist, Leavenworth	J. L. Williams, Oswego	H. S. Ooley, Oswego	C. G. Wickersham, Parsons	E. P. Deihl, Olathe	H. Perley, Spring Hill	Wm. Maxwell, Edgerton	W. D. Barnett, Holton	Jacob Hixon, Holton	J. W. Williams, Cope	H. P. Welsh, Ottawa	G. C. Brackett, Lawrence	C. H. Lovejoy, Vinland	D. G. Watt, Lawrence	Omar H. Ayer, Lawrence	John Pardee, Lawrence	Wm. Cutter, Junction City	G. W. Mosteller, Girard	C. H. Graham, Leroy	Thos. W. Smith, Bax. Spr'gs	H. E. Van Deman, Geneva	A. L. Dornbergh, Humboldt	C. C. Kelsey, Humboldt	D. W. Houston, Garnett	W. G. Evens, Pleasanton	Thos. F. Cook, Monrovia	S. Hatch, Wathena	A. C. Jacot, Media	Total
1	...	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	...	1	2	1	1	1	...	1	1	1	2	2	1	1	1	1	...	...	38
2	1	2	2	2	2	2	2	3	2	2	2	...	2	2	3	2	2	2	2	...	3	...	2	...	1	2	2	2	1	1	2	2	2	2	...	...	34
3	3	3	3	3	3	3	3	2	3	3	3	2	...	3	1	3	3	3	3	3	1	3	3	3	2	3	3	3	4	3	3	3	3	3	...	...	37
4	...	4	4	4	...	4	4	...	4	...	...	4	...	4	4	4	4	4	...	...	...	4	...	...	...	...	4	4	...	4	4	4	...	4	...	...	26
5	4	...	...	...	4	...	...	...	...	4	4	...	...	...	...	...	...	...	4	4	...	...	...	4	3	4	...	...	3	...	...	...	4	...	...	...	...
6	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
8	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
9	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
10	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
11	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
12	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
13	...	...	...	...	...	...	...	...	...	...	...	3	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
15	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	2	4	2	...	...	...	...	...	...	...	...	...	...	...	...	...

GOOSEBERRIES.

	Robt. Milliken, Emporia	J. V. Randolph, Emporia	A. G. Wilhite, Emporia	Ed. Billings, Prescott	J. W. Latimer, Pleasanton	A. G. Seaman, Cadmus	J. S. Van Winkle, Pleas. Ridge	E. J. Holman, Leavenworth	J. C. Gist, Leavenworth	J. L. Williams, Oswego	H. S. Ooley, Oswego	C. G. Wickersham, Parsons	E. P. Deihl, Olathe	H. Perley, Spring Hill	Wm. Maxwell, Edgerton	W. D. Barnett, Holton	Jacob Hixon, Holton	J. W. Williams, Cope	H. P. Welsh, Ottawa	G. C. Brackett, Lawrence	C. H. Lovejoy, Vinland	D. G. Watt, Lawrence	Omar H. Ayer, Lawrence	John Pardee, Lawrence	Wm. Cutter, Junction City	G. W. Mosteller, Girard	C. H. Graham, Leroy	Thos. W. Smith, Bax. Spr'gs	H. E. Van Deman, Geneva	A. L. Dornbergh, Humboldt	C. C. Kelsey, Humboldt	D. W. Houston, Garnett	W. G. Evens, Pleasanton	Thos. F. Cook, Monrovia	S. Hatch, Wathena	A. C. Jacot, Media	Total
1	...	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	1	1	1	No rep't.	1	...	...	46
2	3	2	2	2	...	2	2	2	2	2	2	...	...	...	2	2	2	2	2	1	2	2	2	...	2	2	2	2	2	2	2	2		2	...	...	38
3	1	3	3	3	...	3	3	3	3	3	3	1	...	...	3	3	3	3	3	...	3	...	3	...	3	3	3	3	3	3	3	3		3	...	...	37
4	2	4	4	4	...	4	4	4	4	4	4	...	...	...	4	4	4	4	4	...	4	...	4	...	...	4	4	4	4	4	4	4		4	...	...	36

CURRANTS.

	Robt. Milliken, Emporia	J. V. Randolph, Emporia	A. G. Wilhite, Emporia	Ed. Billings, Prescott	J. W. Latimer, Pleasanton	A. G. Seaman, Cadmus	J. S. Van Winkle, Pleas. Ridge	E. J. Holman, Leavenworth	J. C. Gist, Leavenworth	J. L. Williams, Oswego	H. S. Ooley, Oswego	C. G. Wickersham, Parsons	E. P. Deihl, Olathe	H. Perley, Spring Hill	Wm. Maxwell, Edgerton	W. D. Barnett, Holton	Jacob Hixon, Holton	J. W. Williams, Cope	H. P. Welsh, Ottawa	G. C. Brackett, Lawrence	C. H. Lovejoy, Vinland	D. G. Watt, Lawrence	Omar H. Ayer, Lawrence	John Pardee, Lawrence	Wm. Cutter, Junction City	G. W. Mosteller, Girard	C. H. Graham, Leroy	Thos. W. Smith, Bax. Spr'gs	H. E. Van Deman, Geneva	A. L. Dornbergh, Humboldt	C. C. Kelsey, Humboldt	D. W. Houston, Garnett	W. G. Evens, Pleasanton	Thos. F. Cook, Monrovia	S. Hatch, Wathena	A. C. Jacot, Media	Total
1	1	1	1	1	Cannot recommend.	...	Do not cultivate.	1	1	1	1	2	1	Do not cultivate.	1	1	1	1	1	1	1	No success.	1	...	1	1	1	Failure.	1	1	1	1	No experience.	1	...	...	26
2	2	2	2	2		2		...	2	2	2	3	2		2	2	2	2	2	2	...		2	2	2	2	2		2	2	2	2		2	...	...	26
3	3	3	3	3		3		3	3	3	3	...	3		3	3	3	3	3	3	3		3	3	3	3	3		3	3	3	3		3	...	...	26
4	4	4	4	4		...		...	4	4	4	4	4		4	4	4	4	4	4	4		4	4	4	4	4		4	4	4	4		4	...	...	26
5	...	...	...	...		1		2	...	...	...	...	...		...	...	...	...	...	...	...		...	...	...	...	...		...	...	...	...		...	...	...	...
6	...	...	...	...		4		...	...	...	...	...	...		...	...	...	...	...	...	...		...	...	...	...	...		...	...	...	...		...	...	...	...
7	...	...	...	...		...		...	...	...	...	1	...		...	...	...	...	...	...	...		...	...	...	...	...		...	...	...	...		...	...	...	...
8	...	...	...	...		...		...	...	...	...	...	...		...	...	...	...	...	...	...		...	1	...	...	...		...	...	...	...		...	...	...	...

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